

This content has been downloaded from IOPscience. Please scroll down to see the full text.

Download details:

IP Address: 173.174.146.109

This content was downloaded on 27/01/2021 at 03:00

Please note that terms and conditions apply.

You may also be interested in:

Modified sol-gel coatings for biotechnological applications

A Beganskiene, R Raudonis, S Zemljic Jokhadar et al.

Investigation on Suitability of Pulse Duration Parameter for HeLa Cells Line Proliferation

Properties towards Anti-Cancer Application

Azra Hazwanie Azizulkarim, Muhammad Mahadi Abdul Jamil, Mohamad Nazib Adon et al.

The potential of shark bone powder in breast cancer inhibition (pre-clinical study in DMBA-Induced Sprague Dawly Rats)

S H Bintari, S Parman and M Dafip

Science facilities and stakeholder management: how a pan-European research facility ended up in a small Swedish university town

Anna Thomasson and Colin Carlile

Comments on 'Standard effective doses for proliferative tumours'

Iuliana Livia Dasu, Alexandru Dasu, Juliana Denekamp et al.

Cellular response of pulp fibroblast to single or multiple photobiomodulation applications

Amanda Fernandes, Natalino Lourenço Neto, Nadia Carolina Teixeira Marques et al.

Consideration on suppression of cancer cell proliferation by ultrasound exposure using sonochemical and biological measurements

A Watanabe, H Nishimura, N Kawashima et al.

Study on the Effect of Ultrasound Condition upon Suppression of Cancer Cells Proliferation

-Consideration of Ultrasound Exposure System with Balloon-

Tsuyoshi Takatera, Akihiro Watanabe, Toshio Sato et al.

The Nuclear Nonproliferation Treaty

Kelsey Davenport



The Nuclear Nonproliferation Treaty

The Nuclear Nonproliferation Treaty

Kelsey Davenport

Arms Control Association, Washington, DC, USA

Morgan & Claypool Publishers

Copyright © 2019 Morgan & Claypool Publishers

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the publisher, or as expressly permitted by law or under terms agreed with the appropriate rights organization. Multiple copying is permitted in accordance with the terms of licences issued by the Copyright Licensing Agency, the Copyright Clearance Centre and other reproduction rights organizations.

Rights & Permissions

To obtain permission to re-use copyrighted material from Morgan & Claypool Publishers, please contact info@morganclaypool.com.

ISBN 978-1-68174-925-9 (ebook)

ISBN 978-1-68174-922-8 (print)

ISBN 978-1-68174-923-5 (mobi)

DOI 10.1088/978-1-68174-925-9

Version: 20190701

IOP Concise Physics

ISSN 2053-2571 (online)

ISSN 2054-7307 (print)

A Morgan & Claypool publication as part of IOP Concise Physics

Published by Morgan & Claypool Publishers, 1210 Fifth Avenue, Suite 250, San Rafael, CA, 94901, USA

IOP Publishing, Temple Circus, Temple Way, Bristol BS1 6HG, UK

For Dennis, with love and thanks.

Contents

Preface	ix
Acknowledgments	xi
Author biography	xii
1 Recognizing the threat: origins of the NPT negotiations	1-1
1.1 Early nonproliferation proposals	1-1
1.2 Atoms for peace	1-7
1.3 The impact of the Irish resolution	1-10
1.4 The threat from new technologies	1-17
1.5 The multilateral nuclear force	1-20
1.6 The Soviet reaction to NATO nuclear sharing	1-24
References	1-28
2 Negotiating the NPT	2-1
2.1 Early US and Soviet drafts	2-1
2.2 Finalizing nonproliferation language at the ENDC	2-6
2.3 The nonaligned push on disarmament	2-10
2.4 International versus regional safeguards	2-14
2.5 The influence of Tlatelolco on the NPT	2-21
2.6 Finalizing the text	2-29
2.7 Achieving entry into force	2-35
References	2-36
3 Major NPT milestones	3-1
3.1 Early efforts to end the arms race	3-1
3.2 Dealing with nuclear-armed post-Soviet states	3-5
3.3 Nonproliferation successes and failures	3-8
3.4 Strengthening safeguards: lessons learned from Iraq and North Korea	3-12
3.5 The 1995 indefinite extension debate	3-15
References	3-21

4 A crumbling cornerstone? Future challenges to the NPT	4-1
4.1 The Middle East WMD free zone debate	4-1
4.2 Interpreting Article VI's disarmament obligations	4-3
4.3 The North Korea nuclear crisis	4-7
References	4-11

Appendices

A Treaty on the Nonproliferation of Nuclear Weapons (NPT)	A-1
B Glossary of Terms	B-1

Preface

The first resolution passed by the United Nations on January 24, 1946, called for the creation of a commission to make specific proposals for the ‘elimination from national armaments of atomic weapons and of all other major weapons adaptable to mass destruction.’

Passage of the resolution, just five months after the United States dropped nuclear bombs on the Japanese cities of Hiroshima and Nagasaki, underscored international consensus that the unique threat posed by nuclear weapons demanded their elimination.

Despite the immediate call for disarmament, it took more than two decades for the international community to negotiate a treaty to prevent further proliferation of nuclear weapons and commit states possessing them to take steps toward disarmament.

While nonproliferation and disarmament are now inexorably linked in the Treaty on the Nonproliferation of Nuclear Weapons (NPT), the decision to address both issues within one treaty was not a forgone conclusion. States possessing nuclear weapons initially resisted the push to include disarmament in a treaty designed to prevent the further dissemination of nuclear weapons, arguing that it would complicate nonproliferation efforts and was an issue best left to the states with nuclear arsenals. Including text on disarmament, however, became known as the so-called ‘Grand Bargain’ of the NPT, namely that for states to legally commit to forgo nuclear weapons, states possessing those same weapons would commit to eliminating them.

Now, nonproliferation, disarmament, and peaceful uses of nuclear energy comprise what is known as the ‘three main pillars’ of the NPT. With 191 state parties, the NPT is one of the most universally ascribed to treaties and remains the cornerstone of nonproliferation and disarmament efforts.

Despite the successes of the treaty, its continued relevance should not be taken for granted. As technology and the global political order continues to evolve, the NPT faces new challenges that pose risks to the future of the treaty.

The first chapter describes the early attempts to regulate the spread of nuclear technology and the events that created the political will to negotiate a treaty to address the threat of nuclear proliferation. It discusses efforts in the UN, primarily led by Ireland, that proved critical in laying the groundwork to address nonproliferation and disarmament in the same treaty. This chapter also discusses the impact of the decision by the US to pursue a multilateral nuclear force in Europe, and the Soviet Union’s rejection of any arrangement that would allow western European states to control US nuclear warheads. The final section briefly touches upon the role that two technologies, the gas centrifuge and the ballistic missile, played in underscoring the urgent threat posed by the proliferation of nuclear weapons.

The second chapter addresses negotiations on the treaty itself. The first two sections outline the early efforts by the US and the Soviet Union to reach agreement on the definition of nonproliferation and draft language that would still permit

nuclear-sharing arrangements with NATO. The third section outlines the push by non-nuclear weapon states to include language on disarmament and the debate over whether or not to impose deadlines or list specific actions that states possessing nuclear weapons would be required to take. The fourth and fifth sections address safeguards requirements and access to nuclear technology. Particularly in the fifth section, the influence of Latin America's negotiation of a treaty to declare the region a nuclear-weapons-free zone is highlighted as driving some key provisions that were included in the NPT, including access to nuclear technology for peaceful uses. Finally, the chapter concludes with a description of the final debates over the text at the UN in 1968 and briefly outlines how the treaty entered into force in 1970.

Some of the early successes and trials of the NPT are discussed in the third chapter, although it is by no means an exhaustive list of events that strengthened the NPT or exposed weaknesses in the text. The first section outlines the efforts during the Cold War to slow the arms race and reduce the number of nuclear delivery systems deployed by the US and the Soviet Union. The next three sections highlight several important events that reinforced the NPT or demonstrated inadequacies in the treaty. These include the negotiations with the former Soviet states that inherited nuclear weapons to give them up and join the NPT as non-nuclear weapons states, the cases of Iraq and North Korea, which exposed the inadequacy of the NPT safeguards requirements, and South Africa's decision to dismantle its nuclear warheads. The chapter ends with a discussion of the historic decision in 1995 to indefinitely extend the NPT and the conditions placed on the extension decision.

Finally, the fourth chapter briefly discusses some of the challenges that the treaty faces more than 50 years after its negotiation. Unquestionably, the NPT will face additional challenges as the geopolitical landscape continues to evolve. This chapter, however, focuses on three areas that have continued to plague the regime. The first section focuses on the failure to make progress on a zone free of weapons of mass destruction in the Middle East. The second section highlights the growing frustration over the slow pace of disarmament and efforts by a group of non-nuclear weapons states to pursue a treaty that bans nuclear weapons. Finally, the last section briefly discusses the case of North Korea and the risks its nuclear program poses to the NPT.

Acknowledgments

I would like to thank my colleagues at the Arms Control Association for their support and feedback on this project. I am particularly grateful to Greg Thielmann and Mary Kaszynski for their friendship and encouragement.

Author biography

Kelsey Davenport



Kelsey Davenport is the Director for Nonproliferation Policy at the Arms Control Association, where she provides research and analysis on the nuclear and missile programs in Iran, North Korea, India, and Pakistan and on nuclear security issues. Kelsey also reports on developments in these areas for the organization's journal *Arms Control Today* and runs the Arms Control Association's project assessing the effectiveness of multilateral voluntary initiatives that contribute to nonproliferation efforts. She is the co-author of a series of six reports assessing the impact of the Nuclear Security Summits on efforts to prevent nuclear terrorism. Kelsey has been quoted in numerous outlets, including the *Washington Post*, *The New York Times*, *Foreign Policy*, and *The Guardian*. She also provides commentary on nuclear and missile developments in Iran and North Korea for TV and radio outlets such as, CNN, BBC, MSNBC, and NPR.

Kelsey joined the Arms Control Association in August 2011 as the Herbert Scoville Jr. Peace Fellow. She holds a masters degree in peace studies from the Kroc Institute for International Peace Studies at the University of Notre Dame. She is a term member at the Council on Foreign Relations, a member of the Atlantic Council's Iran Task Force, and serves on the board of directors for the Herbert Scoville Jr. Peace Fellowship.

The Nuclear Nonproliferation Treaty

Kelsey Davenport

Chapter 1

Recognizing the threat: origins of the NPT negotiations

1.1 Early nonproliferation proposals

Sixteen hours after the United States dropped an atomic bomb on Hiroshima, US President Harry Truman described the weapon as a ‘new and revolutionary increase in destruction.’ (See figure 1.1). He said the atomic bomb ‘is a harnessing of the basic power of the universe.... loosed against those who brought war to the Far East,’ and building the bomb represented the ‘greatest achievement of organized science in history.’

Yet in the same speech, Truman noted that the very nature of the atomic bomb demanded that the United States ‘withhold from the world scientific knowledge’ that led to its creation. Truman also said he would recommend the establishment of a commission to ‘control the production and use of atomic power within the United States [1].’

Shortly after the end of World War II, Truman expanded his calls for the control of nuclear warheads, raising the idea of preventing the spread of nuclear weapons by placing existing warheads and nuclear research under international control.

Growing tensions between the United States and the Soviet Union further fueled discussion in the Truman administration about how to address the current US monopoly over nuclear weapons. Some of Truman’s advisors favored sharing weapons technology with the Soviets in the hope of quieting Moscow’s suspicion that Washington would use its arsenal as a tool of coercion. Others, however, argued that the Soviets could not be trusted and the United States would be foolish to relinquish a weapon that ensured military dominance.

In addition to fostering debate over the future of US nuclear policy domestically, the United States sought to engage other powers over the future of nuclear weapons. The United States, the United Kingdom and the Soviet Union agreed to form the



Figure 1.1. US President Harry Truman delivering a statement announcing the bombing of Hiroshima, August 6, 1945. Credit: Harry S Truman Library & Museum.

UN Atomic Energy Commission (UNAEC) during a meeting in Moscow, December 27, 1945. The three states agreed that the UNAEC would address the threat posed by the atom and the scientific possibilities of nuclear research. The UNAEC fell under the auspices of the newly-formed United Nations, which was finalized in October 1945 and set to begin work in January 1946. The UNAEC was to report to the UN Security Council, a condition that Moscow insisted upon and the other two states agreed to accept. Unlike the UN General Assembly, the 15 member Security Council has the power to pass resolutions that are legally binding for UN member states. The five victors of World War II, the United States, the United Kingdom, France, the Soviet Union, and China, were given permanent membership in the body and the ability to veto any resolution put forward for consideration.

Shortly after the formation of the UNAEC, the UN General Assembly passed a resolution—the body's first—on January 24, 1946, which addressed nuclear disarmament and endorsed the creation of the commission. The resolution called for the commission to make specific proposals for the control of atomic energy for peaceful purposes and the elimination of atomic weapons from national arsenals. The UNAEC took up this mandate following the passage of the resolution.

Despite support from the United States (the sole possessor of nuclear weapons), and the United Kingdom and the Soviet Union (both of which were pursuing their

own nuclear weapons programs), UNAEC failed to gain traction during its two-year tenure and the commission did not provide meaningful guidance on the question of disarmament. Support for the UNAEC and the first UN resolution endorsing the commission's work did, however, demonstrate an interest by global powers to address the threat posed by nuclear weapons and a political commitment to disarmament.

As the UNAEC considered disarmament, the Truman administration also began examining options on how to abolish nuclear weapons and ensure a peaceful future for nuclear science and research. US Secretary of States James Byrnes appointed a special commission chaired by Dean Acheson and David Lilienthal to consider these questions. The work done by the commission played a critical role in setting disarmament as a benchmark from the beginning.

The commission produced a report in March 1946, now known as the Acheson–Lilienthal report, which laid the groundwork for US policy opposing the development of nuclear weapons by other states [2]. The report also called attention to the difficulties of controlling dual-use technologies as more states were likely to pursue nuclear programs for research. The report noted that ‘development of atomic energy for peaceful purposes and the development of atomic energy for bombs are in much of their course interchangeable and interdependent.’

The report concluded that inspections would not be enough ensure ‘an otherwise uncontrolled exploitation of atomic energy by national governments’ and that international authorities would be required to prevent the spread of nuclear weapons.

The report recommended that nuclear activities and fissile materials should be controlled by an international body that would license technology and distribute the results of nuclear-related research activities. Once this body was operational, the report recommended that the United States give up its nuclear weapons, but did not include a specific timeline for US disarmament.

Given the recommendations calling for an international body to regulate nuclear research and the existence of the UNAEC, Truman tasked Bernard Baruch to develop a proposal to take to the UN addressing concerns about an impending arms race with the Soviet Union and laying out an option for an international body to control the spread of nuclear technology (see figure 1.2).

Despite Truman’s rhetorical support for disarmament, he had no intention of relinquishing the US arsenal while the Soviet Union was pursuing nuclear weapons. Because of the Soviet program, the United States continued to test additional nuclear devices and expand its nuclear arsenal while the Truman administration simultaneously pursued options to control nuclear technology.

Baruch, who had advised a number of presidents prior to Truman, opposed the option of sharing nuclear technology, particularly with the Soviets, which had been proposed by some of Truman’s advisors at the end of World War II. Truman trusted that Baruch would not put forward a proposal to eliminate the US nuclear arsenal without assurance that the Soviet Union would forgo nuclear weapons. The proposal, now known as the Baruch Plan, drew largely from the Acheson–Lilienthal report’s central conclusion that the spread of nuclear materials and technologies should be controlled.



Figure 1.2. The United States conducts a nuclear test in the Bikini Atoll in July 1946. Credit: Harry S Truman Library & Museum.

Baruch presented his plan to the UNAEC June 14, 1946. The plan called for the creation of the Atomic Development Authority, a new body that would inspect nuclear sites to ensure that only peaceful activities were taking place and would monitor global supplies of uranium [3]. As part of the plan, Baruch said the United States would relinquish control of its nuclear weapons only when inspectors were in place in the Soviet Union, which was known to be pursuing a nuclear weapons program of its own, and the system of international control of fissile material production facilities was in place.

The plan also argued that the Atomic Development Authority should answer only to the Security Council, and that the P5 (China, France, the Soviet Union, the United Kingdom, and the United States) should be prohibited from exercising veto power if the Security Council was voting to impose sanctions against states that engaged in prohibited nuclear activities.

Baruch's proposal met with mixed reactions, even in the United States. Amongst the critics was J Robert Oppenheimer, a physicist who played a key role in the Manhattan Project, which developed the US atomic bomb. Oppenheimer, who also contributed to the Acheson–Lilienthal Report, considered the idea of international control of nuclear facilities an unrealistic plan for constraining the spread of nuclear weapons.

Outside of the United States the proposal also faced criticism. The Soviets rejected the Baruch Plan, as did a number of other states, on the basis that it would hand over significant power and authority to an international body. Given that the UN was still in its infancy and largely untested as an international authority, states were hesitant to trust it with the responsibility of arbiter over the sensitive security issues that might arise from nuclear research and development. Some states were also concerned that the proposed Atomic Development Authority would not grant fair and equitable access to nuclear technology.

Some states also pushed back over the plan's failure to lay out a timeframe for US disarmament. Forgoing nuclear weapons programs while the United States retained

its arsenal raised serious concerns, particularly outside of Western Europe, over how the United States would wield these weapons. In particular, Joseph Stalin, leader of the Soviet Union, had no intention of giving up the aggressive nuclear weapons development program that he embarked on after the US bombings in Hiroshima and Nagasaki.

The Soviets formally reacted to the Baruch Plan on June 19, 1946. Andrei Gromyko, the Soviet Ambassador to the UN, said that his government rejected the sequence, namely that the control of nuclear facilities and materials should be in place before the United States would give up its nuclear weapons. Gromyko instead suggested an international convention to outlaw the manufacture of nuclear weapons and a requirement that the existing warheads be destroyed on a timeline determined by the convention. Under Gromyko's proposal the UNAEC could then develop international controls on nuclear materials and facilities to prevent any further weapons development. The United States, however, rejected the Soviet plan, citing it as inadequate to ensure that civil nuclear programs were not being used for weapons purposes.

Unsurprisingly, the Baruch Plan failed to garner the requisite unanimous support required to proceed with its implementation at a meeting of the UNAEC, December 30, 1946. Poland joined the Soviet Union in abstaining, citing similar concerns to those voiced by Moscow over the sequencing of the plan.

When it became clear that the Baruch Plan would fail, the Truman administration considered another approach that did not rely on international support—namely to create a monopoly over nuclear material and technology to prevent the further spread of weapons. By controlling access to key materials, the United States thought it could prevent other states from developing national capacities to produce the fissile material necessary for nuclear weapons.

Washington worked closely with key allies, the United Kingdom and Canada, to form a group of like-minded states that would corner the market on uranium and sell it only to states that met a high standard for ensuring that the material would only be used for peaceful purposes. Uranium, being a necessary component for uranium- or plutonium-based nuclear warheads, was only being mined in several states at the time and, given its rarity, judged to be the easiest part of the supply chain to control.

The result of these discussions was the Combined Development Agency. Under the auspices of this group, Washington, London, and Ottawa worked to purchase all uranium mined outside of Soviet territory.

The United States complemented its international supply-side approach with US legal requirements for nuclear cooperation, beginning with the McMahon Act in August 1946 (see figure 1.3). The McMahon Act, also known as the Atomic Energy Law, required that a third-party country have strict safeguards in place prior to the United States transferring sensitive information or technology related to nuclear activities. This would allow other states to engage in nuclear research, but prevent civil programs from diverting nuclear materials to weapons activities. The McMahon Act also put US nuclear weapons development under civilian, rather than military, control and created the Atomic Energy Commission to oversee the US nuclear development.



Figure 1.3. President Harry S Truman signs the Atomic Energy Act into Law August 1, 1946. Credit: Department of Energy Office of History and Heritage.

While Washington sought to control access to nuclear technology, the Soviet Union's nuclear weapons program accelerated in the late 1940s.

The Soviet nuclear weapons program was known to Washington, but Moscow's first nuclear test in 1949 took the United States by surprise. US military planners in the mid-1940s had estimated that the Soviet Union would need about 20 years to develop nuclear weapons. The sophistication and secrecy surrounding the Soviet program underscored the fact that attempts by the United States and its allies to control nuclear materials were unlikely to stop a state determined to develop nuclear weapons. The Soviet test also heralded the beginning of the arms race that would shape the global political order for the next 50 years and significantly motivate states without nuclear weapons to push for an end to the arms race in subsequent negotiations on the NPT.

Three years after the Soviet test, in 1952, the United Kingdom tested a nuclear explosive device, becoming the third nuclear-armed state. While the United States and the United Kingdom had reached an agreement in 1943 to collaborate on atomic research and London's pursuit of nuclear weapons was known, it was becoming increasingly apparent that other states were interested in pursuing nuclear weapons and that the Soviet Union was dramatically expanding its arsenal.

By the time US President Dwight D Eisenhower took office in 1953, it was clear that preventing the spread of nuclear weapons by controlling the technical means to acquire them was not a viable solution.

1.2 Atoms for peace

Under the Eisenhower administration, US nuclear policy shifted significantly. While Truman sought to regulate the spread of nuclear weapons and technology and the growth of the US stockpile, Eisenhower dramatically expanded the US nuclear arsenal—from 1050 warheads to more than 20 000 over his eight years in office—maintaining that such expansion was necessary to deter the Soviet Union’s ambitious nuclear weapons program [4].

Eisenhower also shifted the US approach to nuclear research and energy cooperation. He sought to expand access to dual-use technologies so that states could pursue peaceful nuclear energy and research programs.

Eisenhower’s new approach to US nuclear policy was based in part on the conclusions of a report authored by the 1952 Panel of Consultants on Disarmament. The US panel concluded that, given the rapidly expanding Soviet nuclear program, the President should inform the world about the nuclear arms race with the Soviet Union and the danger posed by a rapid spread of nuclear weapons. The report also recommended that Washington provide clarity about the size of its fissile material stockpile, so as to not let the Soviet Union believe that a preventative strike could incapacitate the US and eliminate Washington’s ability to respond with nuclear weapons.

The conclusions played a role in driving Eisenhower’s rapid expansion of the US nuclear weapons stockpile. Eisenhower wanted to make it clear that the United States would be able to retaliate against a Soviet nuclear attack with a second strike. This became the basis of a mutually-assured destruction approach to deterrence with the Soviet Union that would dominate the relationship between the two states for the next 40 years.

To prevent further proliferation, his administration developed a proposal whereby the fissile material produced by the states with such capabilities would be held under international controls in a fuel bank. Any state could then access nuclear materials from the bank for peaceful purposes. Eisenhower thought his plan would address the growing demand for nuclear technology for research and energy purposes and simultaneously head off states from developing indigenous programs to produce fissile materials.

Eisenhower laid out his new approach to nuclear technology and fissile material control in an address to the UN General Assembly, December 8, 1953 (see figure 1.4). Eisenhower, in what has become known as the ‘Atoms for Peace’ plan, said his objective was to ‘hasten the day when fear of the atom will begin to disappear [5].’ Eisenhower proposed the creation of an ‘international atomic energy agency’ set up under the United Nations to collect, store and distribute fissile materials. Unlike the previously proposed Atomic Development Authority, Eisenhower’s agency would not have ownership of the technology, nor the authority to punish violators for misuse of dual-use technology or covert nuclear activities.



Figure 1.4. US President Dwight Eisenhower delivers the ‘Atoms for Peace’ speech at the UN General Assembly, December 8, 1953. Credit: IAEA.

The UN General Assembly endorsed Eisenhower’s proposal to create a new international agency the following year, December 4, 1954.

In addition to the international element, Eisenhower’s plan also had a domestic component. Unlike the Soviet Union, which was providing nuclear assistance without the same standard for safeguards, Eisenhower’s administration contended that US safeguards standards made the US nuclear industry less competitive abroad.

To increase competition, his administration pushed the US Congress to pass the Atomic Energy Act in 1954. The Atomic Energy Act allowed the United States to sell nuclear technology abroad to states that committed not to use the materials and technology for nuclear weapons or weapons-related purposes. Most of the agreements to transfer nuclear-related technologies and materials to third-party countries required that the United States conduct safeguards to ensure that the use of such materials and technologies was peaceful, until the international body proposed by Eisenhower was set up and could assume responsibilities for inspections. The United States also began to train scientists from other countries at its newly developed School of Nuclear Science and Engineering.

Eisenhower's proposal for an international authority and subsequent revision of US law was not without controversy. Critics of the Eisenhower approach raised concerns that the decision to share nuclear technology might lead to a proliferation of nuclear weapons, particularly without strong safeguards. The benefit of hindsight proves that the critics were right to be concerned about Eisenhower's decision. The Atoms for Peace plan facilitated not only peaceful nuclear development, but also inadvertently assisted in the nuclear weapons programs of states like India and Pakistan. Even in the states that did not abuse the assistance, it created the risk and challenge of securing weapons-grade nuclear material, a security threat that increased in the 21st century with the rise of terrorism.

While the United States moved quickly to achieve Eisenhower's vision, the creation of the International Atomic Energy Agency (IAEA) took more time to establish, even after the UN General Assembly endorsed the plan in 1954. Following approval from the UN, Washington presented the Soviet Union with a draft statute for the IAEA in March 1954. Initially, the Soviet Union wanted to prioritize the elimination of nuclear weapons as part of any discussion surrounding the new body. Moscow expressed its concern that the Atoms for Peace approach would result in the spread of fissile materials usable for weapons, and eventually nuclear weapons, particularly if states that already possessed nuclear arsenals were not viewed as reducing dependence on deterrence.

Rather than broaden the discussion to address Soviet concerns, the United States persevered with Eisenhower's original concept and worked closely with other states over the next several years, but with less cooperation from Moscow.

The mandate agreed upon in 1956 tasked the IAEA to work with member states to 'accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world' and to ensure that 'assistance provided by it or at its request or under its supervision or control is not used in such a way as to further any military purpose [6].'⁶ Thus, the dual purpose of the IAEA—to promote and control the atom—was established; although at the time of creation, accepting IAEA safeguards was voluntary for states with nuclear programs. This dual role paved the way for discussions a decade later about requiring safeguards for all non-nuclear weapons states as a condition for the NPT. The IAEA mandate did not, however, establish the fuel bank that Eisenhower envisioned.

After a mandate was agreed by the United States and its negotiating partners, the statute establishing the IAEA was open for approval. By October 1956, 81 states



Figure 1.5. The International Atomic Energy Organization is established in July 1957. Inspectors from the International Atomic Energy Agency inspect a US reactor to help the Agency in developing and testing its safeguards systems. Credit: IAEA.

approved it, enough to establish the IAEA in July 1957. Creation of the IAEA proved critical to the NPT negotiations the following decade. The agency's role in conducting safeguards, which Moscow later conceded to help shape, provides the necessary verification tools to provide assurances that non-nuclear weapon states are only pursuing peaceful nuclear programs (see figure 1.5).

The initial IAEA safeguards, however, were quite limited in scope and have been described as ‘amateurish [7].’ They were applied only to materials and facilities transferred between states rather than entire civil nuclear programs. It was not until the Soviet Union took a firmer stance opposing proliferation and began to work with the IAEA and member states to develop more stringent safeguards that the measures improved in 1965 [8]. The Soviet Union’s support and engagement with IAEA safeguards development proved to be critical for establishing the agency’s role in verifying peaceful nuclear activities under NPT.

1.3 The impact of the Irish resolution

After the initial UN resolution in 1946 to address the threat of nuclear weapons failed to develop a workable proposal, diplomatic efforts to control the spread of

nuclear weapons at the UN were largely pushed by non-nuclear weapons states, building from the 1946 resolution.

Ireland, in particular, emerged as a key player in spurring discussions at the UN on nuclear nonproliferation and disarmament. Resolutions introduced in the First Committee by Ireland between 1958–61 helped to lay the groundwork for negotiating the NPT by building consensus that the spread of nuclear weapons posed a threat to international security and by generating political support for a treaty. The Irish resolutions also eventually linked nonproliferation and disarmament, which proved to be crucial for establishing a commitment in the NPT for the states possessing nuclear weapons to take steps toward dismantlement.

Frank Aiken, the Irish Minister for External Affairs, drove the development of the Irish position and efforts at the UN (see figure 1.6). He was motivated by ‘the slowness with which negotiations towards general disarmament were proceeding’ and the acknowledgment that ‘failure to halt the spread of nuclear weapons during a long period of negotiation on general disarmament was likely to make those negotiations abortive [9].’ Aiken argued it was essential that the nuclear powers ‘undertake not to transfer nuclear weapons to other States.’

Based on Aiken’s leadership, Ireland introduced a resolution in the UN First Committee on Disarmament and International Security in 1958 that had two principle goals. First, it sought to establish an ad hoc committee to study the dangers posed by the proliferation of nuclear weapons and provide recommendations on how to avert the risks of proliferation. Ireland viewed the creation of such a committee as raising awareness about the risk of additional nuclear-armed states, a crucial step toward a permanent ban on nuclear weapons.



Figure 1.6. Frank Aiken, Ireland’s Minister for External Affairs, played a critical role in advancing the debate on nonproliferation and disarmament at the UN General Assembly. Photo credit: UN.

The second principle element in the resolution called for negotiations to suspend nuclear testing, and declared that states possessing nuclear weapons ‘shall not supply other states with nuclear weapons’ during the negotiations [9].

The United States initially opposed the resolution, particularly the new committee to study the risks of proliferation, which it viewed as unnecessary. Other states, such as Argentina and France, criticized the very advisability of preventing states from acquiring nuclear weapons. They argued that freezing the status quo would lock-in inequality between states possessing nuclear weapons—at that time the United States, Soviet Union, and the United Kingdom—and those without. France, at the time, had an active nuclear weapons development program, but had yet to test a device.

The second element, the commitment not to transfer nuclear weapons while negotiations to suspend nuclear testing were underway, met with greater support and less outright opposition from states possessing nuclear weapons. Due to the disparate reactions to the two main elements of the resolution, the Irish requested a separate vote on the paragraph prohibiting transfer of nuclear weapons while negotiations on suspending testing were underway. No state voted against that paragraph, although the United States and other North Atlantic Treaty Organization (NATO) members abstained. The final vote was 37–0, with 44 abstentions.

The decision by the US to abstain from voting on the no-transfer provision was not fueled by ambivalence toward nonproliferation. Rather, the US position was driven primarily by rising concern over deployment of Soviet missiles capable of targeting Western Europe. Recent advances by the Soviet Union in ballistic missile technology called into question the ability of the US nuclear deterrent to prevent aggressive Soviet actions in the European theater. These concerns prompted a decision by Washington to deploy warheads and nuclear-capable delivery systems in Europe and begin conversations about nuclear sharing arrangements with NATO, an intergovernmental military alliance between North American and European states that was formed in 1949 to counter the Soviet Union. For the United States, supporting a nonproliferation resolution in 1958 may have created a political impediment to the negotiation of the NATO nuclear sharing arrangements that were critical to countering the Soviet Union.

The Soviet Union supported the no-transfer paragraph in the Irish resolution in 1958, despite not having established a clear policy on nonproliferation. Nor was the Soviet Union pursuing nuclear sharing arrangements with its Warsaw Pact allies, although Moscow did have nuclear weapons deployed in the satellite states. The Warsaw Pact, formed in 1955 after West Germany was integrated in NATO, included the Soviet Union and seven additional states. It was designed to be a collective security alliance and military counterweight to NATO.

The Soviet Union’s support for the Irish resolution was somewhat at odds with its activities. In 1957, Moscow and Beijing signed an agreement allowing the transfer of nuclear technology and sample materials from the Soviet Union to China to assist Beijing’s nuclear development. The October 1957 agreement proved beneficial to China’s nuclear weapons program, although it was short-lived. The Soviet Union abrogated the agreement in June 1959 following China’s dispute with Taiwan over

an island in the Pacific. The Taiwan incident awakened Soviet fear of being dragged into a future dispute between a nuclear-armed China and the United States, which supported Taiwan. This incident marked a turning point for the Soviet Union and helped to solidify its opposition to nuclear proliferation [15].

Although Ireland ultimately withdrew the 1958 resolution, the fact that no states voted against the second perambulatory paragraph prohibiting transfer highlighted the recognition that member states viewed nuclear proliferation as an urgent threat that required an international solution. Aiken considered that a success.

The following year, the United Nations created a body that would prove critical to the NPT's efforts. After a meeting in Berlin between the United States, the United Kingdom, the Soviet Union, and France, the four states decided to establish a new international forum for negotiations on disarmament-related issues. On September 9, 1959, the UN passed a resolution creating the mandate for the Ten Nation Committee on Disarmament. The ten participating states included Bulgaria, Canada, Czechoslovakia, France, Italy, Poland, Romania, the United Kingdom, the United States, and the Soviet Union (see figure 1.7). The choice of states was designed to balance five Warsaw Pact states with five NATO states. The Committee only met twice for two short periods before it was enlarged in 1962 to the Eighteen Nation Committee on Disarmament (ENDC), which received a mandate from the UN to negotiate with the NPT in 1965.

Ireland put forward another resolution in 1959 that drew on the 1958 effort and the newly created Disarmament Committee. The resolution recommended that the



Figure 1.7. The Ten Nation Committee on Disarmament meets in June 1960. Credit: UN.

Disarmament Committee also consider the dangers of proliferation and the feasibility of an international agreement ‘subject to inspection and control, whereby the Powers producing nuclear weapons would refrain from handing over the control on such weapons to any nation not possessing them.’ Aiken also linked the concept of nonproliferation to security guarantees. Under Aiken’s formula, states renouncing the pursuit of nuclear weapons and abiding by the charter of the UN would receive security guarantees from the existing nuclear powers. The security guarantees would free states from the fear of nuclear attack or coercion, reducing the incentive to pursue independent nuclear arsenals.

The 1959 effort won more support in the First Committee, including the United States, which was coming to realize that more robust safeguards were necessary to guard against states appropriating peaceful nuclear programs for weapons purposes. Washington also reacted more favorably to the resolution’s prohibition on transferring ‘control’ of nuclear weapons, as opposed to ‘possession’ which was emphasized in 1958 [9]. The Eisenhower administration interpreted ‘control’ as allowing the United States to continue discussions on nuclear sharing within NATO. At that point in the discussions, Washington intended to retain control over the nuclear weapons, although the warheads, by virtue of being deployed in NATO member states, would be outside of the ‘possession’ of the United States.

The Soviet Union, however, did not support the 1959 resolution for the very reason that the United States supported it. Moscow rejected the use of ‘control’ on the grounds that it did not prohibit states from positioning nuclear weapons in third-party states. The Soviet Union viewed US nuclear weapons stationed in NATO alliance states and the ongoing discussions on nuclear sharing as a threat to its security and interests. Bulgaria and Czechoslovakia joined the Soviet Union in criticizing the resolution, driven by the fear of Western European states having access to nuclear weapons.

Despite its concerns about the text, the Soviet Union abstained from voting on the resolution, which went on to pass the General Assembly, November 20, 1959, by a vote of 68–0, with 12 abstentions. In addition to the Soviet Union, France also abstained. France, which tested its first nuclear device the following year, was still not convinced that preventing proliferation of nuclear weapons was the best course for international policy.

Aiken viewed the vote as a success, as it established that further dissemination of the nuclear weapons constituted a threat and addressing the threat required negotiating an international agreement.

At the 1960 meeting of the UN, Ireland resumed its push to address the threat of proliferation. Joined by Japan, Ghana, Mexico and Morocco, Ireland introduced a resolution that moved beyond the process recommendations of 1959 and introduced greater substance into the debate over nonproliferation. The resolution called on ‘all governments to make every effort to achieve permanent agreement’ to halt the spread of nuclear weapons through an agreement to prevent nuclear proliferation. The resolution called for states that had not yet acquired nuclear weapons to declare intentions not to pursue nuclear warheads and refrain from acquiring or

manufacturing them. The states that possessed nuclear arsenals would refrain from relinquishing control of their weapons.

The 1960 resolution met with mixed reactions. The Soviet Union and several other Warsaw Pact states came out in support of the text. NATO, however, was divided, with Canada, Denmark, Norway, and Iceland supporting the measure and the United States and Italy in opposition [9]. Washington said that while it could not support the resolution because the United States opposed an indefinite commitment not to transfer nuclear weapons and the resolution contained weak language on the responsibility of the nuclear powers, it would abstain during voting out of support for the motivation behind Ireland's proposal.

While the resolution was ultimately approved by the General Assembly 68–0 with 26 abstentions, it failed to jumpstart negotiations on the agreement to prevent the proliferation that it called for. Several nonaligned states, such as Peru and Brazil, also abstained during the final vote on the resolution over the absence of control measures.

It was not until 1961 that what has become known as the 'Irish Resolution' succeeded in outlining the central tenets of what would become the basis of the agreement for the nuclear nonproliferation treaty. Ireland, which had been working closely with the United States, introduced the resolution, titled the Prevention of the Wider Dissemination of Nuclear Weapons, during the UN First Committee session.

When Aiken introduced the resolution, he referenced the debate on preventing the dissemination of nuclear weapons at the prior three meetings of the General Assembly and referenced the growing recognition that the further spread of nuclear weapons constituted a global threat. He also noted that when the United States and the Soviet Union met, September 20, 1961, to discuss the principles for disarmament negotiations, each state released a statement with nearly identical language on preventing proliferation. The statements both emphasized that states not owning nuclear weapons should undertake commitments not to manufacture or obtain nuclear weapons and states possessing nuclear weapons should not relinquish such control over nuclear weapons [10]. The two basic premises in this statement would become the first two articles of the NPT.

The 1961 resolution introduced by Ireland proposed an agreement based on these principles: 'under which the nuclear state would undertake to refrain from relinquishing control of nuclear weapons and from transmitting the information necessary for their manufacture to states not possessing such weapons, and provision under which states not possessing nuclear weapons undertake not to manufacture or otherwise acquire control of such weapons.' It contained an operative paragraph that called on all governments to make every effort to achieve a permanent agreement based on those commitments.

In urging states to support the resolution, Aiken argued it was critical to 'strike while the iron is hot' and negotiate an agreement to prevent the dissemination of nuclear weapons. In addition to the co-sponsors, the United States also worked to garner support for the resolution amongst NATO. Simultaneously, the United States sought to assure NATO partners that supporting the resolution was consistent with US defense commitments.

While several states, including Ukraine and India, still objected to the resolution's failure to specify the physical transfer of nuclear weapons as a threat, they too ultimately supported the resolution.

On December 4, 1961, the General Assembly unanimously approved Resolution 1665, the 'Irish Resolution.' While Resolution 1665 did not carry the weight of a treaty or a legally-binding Security Council resolution, its importance should not be understated. Resolution 1665 set the precedent that responsible nuclear behavior included preventing the spread of nuclear weapons and prohibiting the transfer of control of nuclear warheads. It also demonstrated international support for nonproliferation efforts.

In addition to the Irish Resolution, the General Assembly unanimously passed Resolution 1722, sponsored by the United States and the Soviet Union, the Resumption of Negotiation and Composition of the Disarmament Committee. The resolution grew out of the aforementioned September meeting between Moscow and Washington during which the two states agreed on principles to guide disarmament efforts in the so-called McCloy-Zorin statement, named for John McCloy, Director of the US Disarmament Commission, and Vaerian Zorin, Soviet Ambassador to the UN (see figure 1.8).

The McCloy-Zorin statement included agreement on the goal of eliminating stocks of weapons of mass destruction and their means of delivery in timed stages, with agreed upon verification and each stage [10]. The principles also called for equitably balanced measures that ensured no one state retained a strategic advantage over the other.



Figure 1.8. John McCloy meets with US President John F. Kennedy in 1961. Credit: Abbie Rowe. White House Photographs (John F. Kennedy Presidential Library and Museum, Boston).

Resolution 1722 recommended negotiations take place based on the principles agreed to in the September meeting, which included commitments by non-nuclear weapon states not to manufacture or obtain nuclear weapons that Aiken called attention to in advancing the Irish Resolution. The resolution also enlarged the ten states at the Committee on Disarmament, equally divided between NATO and the Warsaw Pact, to eighteen. When the new Eighteen Nation Committee on Disarmament (ENDC) convened again under the expanded mandate, Brazil, Burma, Ethiopia, India, Mexico, Nigeria, Sweden, and the United Arab Republic joined the ten original states in Geneva.

Passage of both resolutions in 1961 was critical for paving the way to negotiations on the NPT in both substance and process. In linking proliferation to disarmament, Resolution 1665 provided a basis for negotiating both issues simultaneously in the same text, whereas Resolution 1722 provided a mandate for pursuing talks at the ENDC supported by the UN and based on agreed-upon principles by the Soviet Union and the United States. Unanimous support for both resolutions also provided a critical political endorsement for the subsequent negotiations.

While the Irish Resolution is now seen as a catalyst for the NPT negotiations, it was not the only resolution put forward at the time to address the states' concern about the further dissemination of nuclear weapons. Some of these other efforts later influenced elements of the NPT. For instance, in 1961, Sweden pushed a nonproliferation resolution at the UN General Assembly known as the Uden Plan. The Swedish proposed that the nonproliferation challenge be handled on a regional basis, with groups of countries coming together to create regions free of nuclear weapons [15]. The plan also called for states without nuclear weapons in these regional blocks to refuse to receive and store such weapons. The Soviet Union supported the Swedish resolution, but the United States and several of Washington's key allies opposed the plan. The United States saw the regionally based approach as incompatible with extended deterrence requirements and urged NATO partners to oppose the measure. Still, the Uden Plan raised the concept of zones free of nuclear weapons, which would later be incorporated into the NPT.

1.4 The threat from new technologies

Advances in technology in the 1950s and 1960s also served as an impetus for nonproliferation efforts. Development in both the means of producing fissile material and long-range missiles capable of delivering nuclear warheads in the 1950s spurred concern about the threat of proliferation and influenced states possessing nuclear weapons—primarily the United States and the United Kingdom—to take a more proactive approach to supporting nonproliferation efforts.

The development of the gas centrifuge was one of the noteworthy advances that changed the proliferation landscape. Prior to the invention of the centrifuge, fissile material for warheads, either uranium with greater than 90 percent concentration of the isotope uranium-235, or separated plutonium, were produced using gaseous diffusion (uranium) or spent nuclear-fuel reprocessing facilities (plutonium). Both types of facilities were costly and difficult to conceal.

Centrifuges, however, increased the risk of illicit nuclear weapons activities. Developers feared that because of its compact size, the relative ease of manufacture, and cost-effectiveness, the centrifuge would enable states to develop covert nuclear programs in facilities that would be difficult to detect (see figure 1.9).

In 1954, for instance, the United States stopped West Germany from selling gas centrifuges to Brazil. A US official noted at the time:

'Should the gas centrifuge process be successfully developed on an unclassified basis, it could be utilized in a number of countries either openly or secretly and

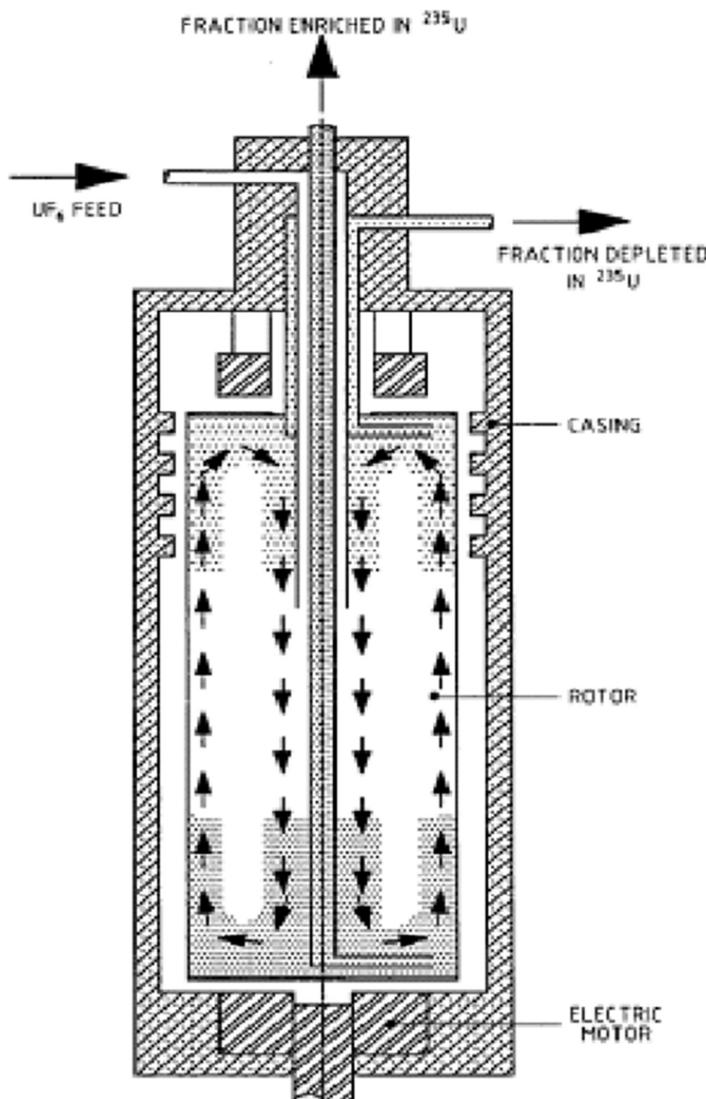


Figure 1.9. The gas centrifuge, a smaller, more efficient way to enrich uranium, changed the proliferation landscape. Credit: WikiCommons https://upload.wikimedia.org/wikipedia/commons/c/c1/Gas_centrifuge_nrc.png.

in either event complicate the problem of preventing the spread of nuclear weapons [11].'

West Germany did, however, succeed in selling centrifuge technology to South Africa. Throughout the 1960s, South Africa developed a gas centrifuge program in secret based on the acquisition. While South Africa did not launch its formal nuclear weapons program until the 1970s, the US prediction that centrifuge technology could be utilized secretly to advance nuclear weapons programs was already being realized [12].

The 1960s saw further advances in the gas centrifuge. Austrian émigré Gernot Zippe began working on the gas centrifuge in a sustained manner for the US Atomic Energy Commission (AEC) in 1960. He later published details about his research in an unclassified report that demonstrated how centrifuges could be manufactured more easily and cost effectively. Based on Zippe's research, the AEC noted that 'the gas centrifuge process lends itself to the construction of small plants and may, therefore, present nuclear weapons proliferation potential; further, small centrifuge plants would be relatively easy to conceal [13].'

The UK, in particular, voiced concern that states without nuclear weapons might be hesitant to sign up to a nonproliferation treaty out of concern that safeguards would not be adequate to ensure that non-nuclear weapon states were not pursuing production of fissile material for military purposes. During negotiations on the NPT, British officials raised the point with their US counterparts, arguing that centrifuge development could be a 'real and irreversible threat' to entry into force of the treaty and sought US support for developing a solution to explicitly address the question of whether or not production of nuclear materials would be permitted under the treaty. By the time the treaty text was finalized in 1967, however, the United States felt that the dual commitment not to pursue nuclear weapons along with safeguards put in place by the IAEA would be sufficient to ensure that any diversion would be detected.

Another technological driver that influenced US thinking about nonproliferation negotiations was the growing missile gap between the United States and the Soviet Union in the late 1950s.

Following World War II, both countries embarked on ambitious programs to replicate and build on the successes of Nazi Germany's rocket program. The Nazis' ability to hold targets hostage at a greater distance to rocket fire without endangering pilots was attractive to both states.

The US long-range missile program, however, was poorly funded and a lower priority through 1954. The United States relied on its superior air force for the delivery of its nuclear deterrent and initially nuclear warheads were too heavy and bulky to be deliverable via missile. It was not until the AEC succeeded in developing a lighter nuclear warhead that could be placed on a missile, known as a 'miniaturized' warhead, that the Atlas missile program was given priority status in the Air Force in 1954 [14].

The Soviet Union, however, invested more resources during the early years of its rocket program. Unlike the United States, which had the advantage of geography, the Soviet Union's proximity to NATO made ballistic missiles an attractive option for deterring the alliance. Moscow also viewed long-range missiles as a way to offset US air power superiority.

The Soviet investment paid off. While the United States had beaten the Soviet Union to the development of the atomic bomb, Moscow was the first to test a ballistic missile with a range capable of reaching the United States, a system now classified as an intercontinental ballistic missile, or ICBM (range greater than 5500 km). On August 26, 1957, the Soviet Union announced it had tested a missile, the R-7, capable of reaching ‘anywhere in the world.’

The 1957 Soviet announcement sparked fear amongst US officials of a ‘missile gap’ that would give Moscow a strategic advantage over the United States. The successful launch of the satellite Sputnik, less than two months after the ICBM test using a modified version of the R-7, further fueled US fears and accelerated Washington’s efforts to achieve similar technological successes. Nearly a year later, in November 1958, the United States achieved a full range test of its Atlas ICBM (see figure 1.10).

While the United States may have overreacted to the Sputnik and the Soviet Union’s missile advantage, the ability to use missiles to deliver nuclear warheads over long distances did change the strategic environment. Both of these technologies, the centrifuge and the ballistic missile, increased the threat of proliferation and contributed to the political impetus to negotiate a nonproliferation treaty.

1.5 The multilateral nuclear force

Despite having fought on the same side during World War II, the relationship between the United States and the Soviet Union deteriorated quickly in the years following the war. By 1951, the United States determined that the Soviet Union could overwhelm Western Europe militarily, an unacceptable risk to the United States and its allies [15].

In July 1953, to address the Soviet threat, the Eisenhower administration committed to provide NATO with nuclear weapons to deter the Soviet Union’s military advantage in the European theater, a commitment that would later complicate negotiations on the NPT. When the first nuclear weapons arrived in Europe in September 1954, significant questions still persisted for US nuclear planners about arrangements between the host states and Washington over the storage, custody, and authority to launch nuclear weapons.

The launch of Sputnik in October 1957 and the build-up of medium-range nuclear-capable ballistic missiles by the Soviet Union in Eastern Europe further accelerated the US nuclear planning. The Soviet Union’s advantage lay in its medium-range ballistic missiles, an estimated 600–800 by the early 1960s, most of which were targeted at Western Europe. The United States at that time was relying primarily on its nuclear-capable Polaris submarines to deter the Soviet Union (see figure 1.11), as US missiles in the United Kingdom, Italy, and Turkey were becoming obsolete and scheduled for dismantlement [16].

In response to the aggressive Soviet buildup, the US Joint Chiefs recommended pursuing custodial arrangements with NATO partners to ensure the availability of nuclear weapons for timely and effective defense of the alliance.



Figure 1.10. The United States successfully tests an Atlas ICBM. Credit: Wiki Commons https://commons.wikimedia.org/wiki/File:Atlas_missile_test_launch.jpg.

Discussions over nuclear sharing arrangements began in earnest with the NATO North Atlantic Council (NAC), the political decision-making body of the alliance, in December 1957. That month, the NAC agreed on a formal arrangement to ‘establish stocks of nuclear warheads which will be readily available for the defense of the Alliance in case of need [17].’ The weapons would be deployed under US control and remain in US custody. Warheads would be mated with delivery systems only after the United States released the warheads for launch. At that point, NATO



Figure 1.11. USS George Washington during its launching ceremony, June 28, 1959. The USS George Washington carried nuclear-capable Polaris ballistic missiles. Credit: US Navy.

would take over command and control of the nuclear weapons, including the decision to launch.

Within the next several years, the United States deployed thousands of warheads in Western Europe. Despite these steps, some NATO allies still expressed concern that the Soviet Union could use its medium-range nuclear-capable ballistic missiles to hold Western Europe hostage to demands from Moscow. Several European states also expressed dissatisfaction with the US nuclear monopoly in NATO and wanted a more direct role in the control and conduct of NATO nuclear strategy.

In response to European allies' desire to play a greater role in NATO's nuclear strategy, the United States raised the idea in December 1960 of creating a multi-lateral force (MLF) within NATO to field the alliance's nuclear deterrent. US Secretary of State Christian Herter recommended at the NATO ministerial meeting that year that five nuclear submarines with Polaris ballistic missiles be committed to a NATO force, if the alliance could develop a way to manage the deterrent.

The United States was motivated to pursue this approach for two primary reasons. First, the United States saw a NATO nuclear force as a means of quelling allies' concerns about Washington's commitment to nuclear deterrence in Europe in light of the Soviet missile superiority. Secondly, the United States assessed that

pursuing this approach might head off some NATO states from pursuing independent nuclear deterrents. At that point, both the United Kingdom and France had tested nuclear weapons, while other NATO states were pursuing nuclear research and had not ruled out weapons programs.

West Germany in particular was pushing for inclusion in nuclear planning and deployment and both the United States and the Soviet Union were concerned Bonn might pursue its own nuclear weapons program, which would have a destabilizing impact. Both Moscow and Washington also assessed that West Germany's pursuit of nuclear weapons would likely set off a proliferation cascade in the region. The United States saw NATO and the MLF as a way to ensure that West Germany, and to a lesser extent Italy, did not use security concerns as a justification to develop national nuclear forces.

The initial concept for the MLF that the United States presented to NATO included the development of mixed nationality crews that would oversee and man strategic submarines and tactical nuclear weapons under the command of NATO's Supreme Allied Commander for Europe. The mixed nationality crews were designed to prevent any one state from monopolizing a crew and creating de-facto national nuclear arsenals, which could be destabilizing. The proposal also called for a 'two-key system' under which the United States would need to give any consent for the use of nuclear weapons, although some allies pushed for Washington's role to be a temporary condition, and eventually sole authority would lie with NATO.

The response to the MLF concept was mixed. France objected to the entire concept, based in part on its current view of NATO. In the early 1960s, Paris had begun withdrawing from the NATO alliance integrated military command structure and France's relationship with London was strained over French President Charles DeGaulle's opposition to the United Kingdom's desire to join the European Common Market. France also viewed the MLF as a tool that would further empower the US within the NATO structure. The French wanted to see the creation of what it termed the 'third force' of Europe, based on France's own evolving nuclear arsenal, that would give more equity to multilateral control of nuclear warheads. The United States saw the French position as a challenge to the integration of NATO.

For states that desired a greater role in NATO nuclear planning, the MLF proposal allowed more involvement, but the United States retaining a 'veto' over launch did not arrest existing concerns that Washington would not risk an attack on its own soil to defend Western Europe from a Soviet strike or nuclear blackmail. Compounding that concern was the US decision to modify the MLF proposal in February 1963. At that time, Kennedy cut back the scope of the force to only include naval surface vessels armed with nuclear-capable Polaris A-3 missiles [17]. Kennedy's decision was driven in part by a reluctance to allow even allied states access to US nuclear submarines, which were initially to be part of the MLF. Given that Congress would need to amend the Atomic Energy Act to allow for shared possession of nuclear weapons, the Kennedy administration believed that the sensitive technology on US nuclear-submarines would likely complicate, or even prevent, the amendment from passing Congress. The MLF had its critics in the

United States, including members of the US military, who thought it unnecessary and undesirable.

While the reduced scope of the MLF proposal was judged to be more palatable in Washington, several NATO allies argued that surface ships alone were inadequate to deter the Soviet threat and that they were vulnerable to a first-strike. France openly rejected the modified MLF proposal and in a speech in January 1963 offered an alternative to West Germany, under which Bonn and Paris could collaborate on nuclear and conventional forces to create a ‘European Force.’

Despite these concerns and France’s objections, Kennedy pushed for formal negotiations on the MLF to begin. A working group composed of eight NATO states met in 1963 in Paris to discuss the technical elements that would be required to advance the MLF concept, including a charter to define the roles of participating states and develop a training experiment to test the viability of mixed nationality crews on the US surface ships that Washington committed for the MLF. All of the NATO allies except Belgium agreed to participate in the demonstration and contribute personnel to man the mixed crews, although several, such as Greece and Turkey, conditioned participation on the United States funding the MLF, rather than pursuing the proposed 10 percent increase in contributions to NATO to support the nuclear force [17].

These talks continued throughout 1964. At the end of that year, Johnson announced a halt to the US ‘pressure tactics’ to develop the MLF. Johnson desisted, in part, due to the United Kingdom’s introduction of a different configuration, the Atlantic Nuclear Force (ANF). Under the British plan, the United Kingdom and the United States would contribute submarines, manned by their own crews, and mixed-nationality surface ship crews. The United Kingdom and the United States would both have to give authority to launch.

With no consensus on a path forward after years of discussion, the MLF concept seemed destined to remain on the drafting table. Ultimately, the United States would drop the MLF proposal as part of a compromise with the Soviet Union to advance the NPT.

1.6 The Soviet reaction to NATO nuclear sharing

On the Soviet side, the US build-up of nuclear weapons in Europe and the possibility of multilateral control of the NATO nuclear deterrent was alarming. In addition to the geographic advantage that favored the United States, Washington’s push to expand NATO nuclear forces was now challenging the Soviet Union’s military advantage in the European theater. Moscow and its Warsaw Pact allies were particularly concerned about how the decision for mixed nationality crews to oversee NATO’s nuclear deterrent could empower West Germany and possibly spur Bonn to develop a national nuclear weapons capability or use its access to NATO nuclear weapons for coercive aims.

The Soviet Union sought to partially negate the US geographic advantage by deploying nuclear weapons in Cuba. When Fidel Castro seized control of Cuba in the 1959 revolution, he quickly sought ties with the Soviet Union and became dependent on Moscow for military aid. After the Central Intelligence Agency backed the Bay of Pigs invasion, when anti-Castro Cubans attempted to overthrow

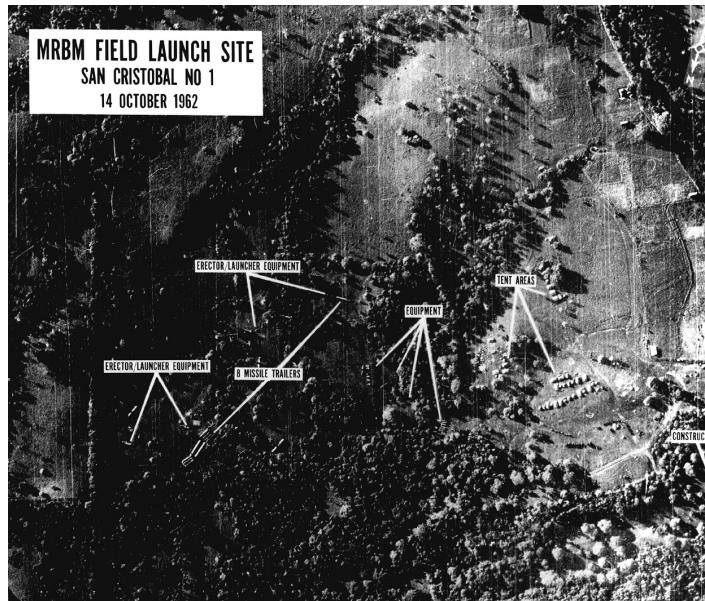


Figure 1.12. A surveillance photo showing the construction of a missile base in Cuba that was shown to Kennedy on the morning of October 16, 1962. Credit: WikiCommons https://commons.wikimedia.org/wiki/File:Cuba_Missiles_Crisis_U-2_photo.jpg.

Castro, he further strengthened the country's relationship with the Soviet Union, which led to an agreement to deploy medium and intermediate range nuclear-tipped ballistic missiles on the island to deter further attack.

Soviet efforts to transfer nuclear-capable missiles to the island were discovered by US intelligence efforts in October 1962 (see figure 1.12) and subsequently led to diplomatic condemnation and a naval blockade. The commensurate crisis, now known as the Cuban Missile Crisis, brought the two countries to the brink of nuclear war. De-escalating the crisis, Soviet leader Nikita Khrushchev agreed to remove the missiles from Cuba. In return, the United States pledged to respect the territorial integrity of Cuba. Kennedy also quietly assured the Soviet Union that the United States was planning to withdraw its medium-range nuclear-capable Jupiter ballistic missiles from Turkey, which the Soviet Union viewed as a threat.

The Cuban Missile Crisis was instructive to future NPT efforts for several reasons. First, it demonstrated to the United States and the Soviet Union that nuclear risk reduction was a critical necessity to avert an escalating conflict that could lead to nuclear use. Second, the agreement that ended the crisis, which both sides abided by, highlighted that the two states could work together to de-escalate nuclear issues and abide by agreed-upon measures.

After the Cuban Missile Crisis, the Soviet position on nonproliferation and NATO nuclear sharing began to shift. In a significant deviation from the hard-line approach that the Soviet Union was taking toward the MLF and NATO, Khrushchev informed the Warsaw Pact that the Soviet Union would not oppose

NATO nuclear sharing, so long as West Germany would not have any control over nuclear warheads in peacetime. If the United States was prepared to make that guarantee, Khrushchev said the Soviet Union would agree to negotiations to prevent the spread of nuclear weapons [15]. Ironically, after the Soviet Union had provided Beijing with access to nuclear materials and technologies in the previous decade, Khrushchev also saw a nonproliferation accord as a means to pressure China to abandon its nuclear program. At this point, the Soviet–Chinese relationship was deteriorating, and Moscow was beginning to view China’s nuclear weapons program as a growing threat to Soviet interests and more broadly, the bipolar world order.

Khrushchev, however, faced resistance in the Warsaw Pact states, particularly from East Germany and Poland, both of which opposed West German access to nuclear weapons, even under NATO constraints, and resented being perceived as a conduit for Soviet foreign policy, rather than helping guide the Warsaw Pact’s position on nuclear issues.

In particular, Wladyslaw Gomulka (see figure 1.13), leader of Poland’s communist party, took a hardline approach, insisting that negotiations on a nonproliferation treaty ban any multilateral nuclear forces outright [19]. He feared improved relations between Moscow and Bonn as potentially threatening the security and stability of communism in Poland. In a letter to Khrushchev in October 1963, Gomulka accused the Soviet Union of making a unilateral concession to the United States. It was well-



Figure 1.13. Wladyslaw Gomulka (left), leader of Poland’s communist party meets with Soviet Union General Secretary Leonid Brezhnev. Credit: By Bundesarchiv, Bild 183-F0417-0001-011/Kohls, Ulrich/CC-BY-SA 3.0, CC BY-SA 3.0 de. <https://commons.wikimedia.org/w/index.php?curid=5665693>.

known at this point that the MLF had its critics within NATO, and he argued that Khrushchev's position would undermine opposition to the MLF within NATO, if the Soviet Union was seen as accepting limited nuclear sharing. He also expressed the fear that Bonn would use the MLF for coercive purposes, even without peacetime control.

The fear of West German access to nuclear weapons existed prior to Khrushchev's announcement. Concern about West German control over nuclear weapons had actually led Poland to propose a nuclear-free zone in central Europe in 1957. Poland also hoped to avoid the deployment of Soviet nuclear weapons on Polish territory. Known as the Rapacki Plan, the zone would cover East and West Germany, Poland, and Czechoslovakia. The proposal, which coincided with the US push on NATO nuclear sharing, generated debate but no real action [18]. Gomulka revived the proposal in 1963, and attempted to get the four states to agree to freeze nuclear weapons stationed in their respective states at existing levels. The proposal, however, met with resistance from Poland's Warsaw Pact partners, undermining any chance of success before Poland could truly pursue the idea.

Gomulka also opposed using any negotiations on nonproliferation to pressure China to abandon its nuclear program. He stressed that a divide between China and the Soviet Union could have negative implications for socialism in the Warsaw Pact states.

East Germany prioritized different concerns about the Soviet position on NATO nuclear sharing. Walter Ulbricht told Soviet Deputy Foreign Minister Vasili Kuznetsov in October 1963 that East Germany feared that creation of the MLF would empower West Germany and undermine efforts to persuade Bonn to recognize East Germany, a key priority for Ulbricht [19]. Unlike Poland, East Germany supported the Soviet Union's hardline approach to China.

Romania also became a vocal critic within the Warsaw Pact of the approach that the Soviet Union was taking. Romania's position was forged in part by a closer relationship with China than other Warsaw Pact states. Both Romania and China opposed any nonproliferation agreement at that time, which was unsurprising given that Beijing had yet to test a nuclear device, but was advancing rapidly toward that capability. Romania also wanted to see greater emphasis on disarmament. Gomulka would later accuse Romania of deliberately attempting to undermine Warsaw Pact unity by insisting on tying conditions to nonproliferation that other states could not accept, such as universal disarmament.

Ultimately China's first nuclear test in 1964 and Khrushchev's fall from power later that year forged a common stance between East Germany, Poland and the Soviet Union, paving the way for a common Warsaw Pact policy toward a nonproliferation treaty. With Khrushchev out, Ulbricht and Gomulka pushed the new General Secretary, Leonid Brezhnev, to oppose the MLF more forcefully [19]. Brezhnev had opposed Khrushchev's handling of the Cuban Missile Crisis, arguing that Khrushchev had 'folded' to Kennedy's demands to remove the missiles. Thus, he was more inclined to take a hardline on countering US nuclear sharing in NATO.

Gomulka and Ulbricht's push was inadvertently assisted by West German Chancellor Ludwig Erhard who, in October 1964, suggested that if NATO could not come to an agreement on the MLF, West Germany and the United States would

establish a joint nuclear force. Despite Erhard later clarifying his remarks to indicate there were no plans for a US–West German nuclear deterrent, his initial remarks pushed Gomulka to call for a concrete response from the Warsaw Pact. He opposed an empty declaration condemning the MLF, which prompted East Germany and the Soviet Union to collaborate on specific text to define the Warsaw Pact's position on nonproliferation. The text backtracked on Khrushchev's concession to the United States regarding nuclear sharing and linked nuclear forces in alliance states to proliferation, which was a key sticking point for Poland. Ultimately by January 1965, the Warsaw Pact had unified its stance on nonproliferation and the parameters it would accept for NATO nuclear sharing. Only Romania rejected pursuing a nonproliferation treaty agreement.

References

- [1] Truman H S 1945 Statement by the president announcing the use of the A-bomb at Hiroshima (August 6, 1945) *The American Presidency Project* [online] ed P G Gerhard and J T Woolley <http://www.presidency.ucsb.edu/ws/?pid=12169>
- [2] Barnard C I, Oppenheimer J R, Thomas C A, Winne H A and Lilienthal D E 1946 *A Report on the International Control of Atomic Energy* Prepared for the Secretary of State's Committee on Atomic Energy (Washington D C: U. S. Government Printing Office)
- [3] Bernard B 1946 Address by Mr Bernard Baruch (June 14, 1946) *Atomic Archive* (United Nations Atomic Energy Commission) <http://www.atomicarchive.com/History/mp/p6s5.shtml>
- [4] Lay S J 1953 Basic National Security Strategy *A Report to the National Security Council* (National Security Council Paper) No. 162/2 (NSC 162/2) <https://fas.org/irp/offdocs/nscc-hst-nsc-162-2.pdf>
- [5] Eisenhower D D 1953 Address by Mr Dwight D Eisenhower, President of the United States of America *The 470th Plenary Meeting of the United Nations General Assembly (December 8, 1953)* <https://www.iaea.org/about/history/atoms-for-peace-speech>
- [6] Fischer D 1997 *History of the International Atomic Energy Agency: The First Forty Years* (Vienna: IAEA)
- [7] Büchler C L 1997 *Safeguards: The Beginnings, International Atomic Energy Agency: Personal Reflections* (Vienna: IAEA), p 48
- [8] Finlay T 2007 Looking back: The additional protocol *Arms Control Today* (November)
- [9] Chossudovsky E M 1990 The origins of the treaty on the nonproliferation of nuclear weapons: Ireland's initiative in the United Nations (1958–1961) *Irish Studies Int. Affairs* **3** 111–35
- [10] McCloy and Zorin 1961 McCloy–Zorin Accords (September 20, 1961) *Project of the Nuclear Age Peace Foundation* http://www.nuclearfiles.org/menu/key-issues/nuclear-weapons/issues/arms-control-disarmament/mccloy-zorin-accords_1961-09-20.htm
- [11] State Department Instruction CA-2553 to US High Commissioner, Bonn *Centrifuges for Brazil* (16 October 1954) Secret
- [12] Pabian F 2015 South Africa's denuclearization exemplar *Nonproliferation Rev.* **22** 27–52
- [13] Krige J 2012 The proliferation risks of gas centrifuge enrichment at the dawn of the NPT *Nonproliferation Rev.* **19** 219–27
- [14] SM-65 Atlas, Missile Threat CSIS *Missile Defense Project* <https://missilethreat.csis.org/missile/atlas/> (last accessed December 3, 2017)

- [15] Popp R 2017 The long road to the NPT: from superpower collusion to global compromise *Negotiating the Nuclear Nonproliferation Treaty: Origins of the Order* ed P Roland, H Livio and W Andreas (London: Routledge)
- [16] Baker D 1978 *The Rocket: The History and Development of Rocket & Missile Technology* (New York: Crown Publishers)
- [17] Kohl W L 1965 Nuclear sharing in NATO and the multilateral force *Political Sci. Q* **80** 88–109
William A 2017 The NPT and the origins of NATO's nuclear sharing arrangements *IFRI Rev.* **4** 18–32
- [18] Goldblat J 1997 Nuclear weapon free zones: a history and an assessment *Nonproliferation Rev.* **4** 18–32
- [19] Crump-Gabreels L 2017 Nonproliferation under pressure: the nuclear debate within the Warsaw Pact, 1965-1968 *Negotiating the Nuclear Nonproliferation Treaty: Origins of the Order* ed P Roland, H Livio and W Andreas (London: Routledge) pp 97–115

The Nuclear Nonproliferation Treaty

Kelsey Davenport

Chapter 2

Negotiating the NPT

2.1 Early US and Soviet drafts

The Treaty on the Nonproliferation of Nuclear Weapons, or the Nuclear Nonproliferation Treaty (NPT) as it is more commonly known, was primarily negotiated from 1966–1968 at the Eighteen Nation Disarmament Committee (ENDC). However, the important work in forging a common position between the United States and the Soviet Union took place prior to that period. Before the ENDC received the mandate for negotiations in late 1965, the United States and the Soviet Union exchanged ideas and drafts that were crucial to forging consensus on the final text, particularly Articles I and II, which defined the prohibitions on nuclear-weapons states and non-nuclear-weapons states in regards to development, acquisition and transfer of nuclear weapons and related technologies.

As support for the nonproliferation treaty gained traction in the UN, US Secretary of State Dean Rusk approached Soviet Foreign Minister Andrei Gromyko in March 1962 to gauge Moscow's thinking about nonproliferation. Two years earlier, Eisenhower informed Khrushchev that US policy was to 'avoid widening the circle of nuclear powers.' (See figure 2.1). The Soviet Union, which had been assisting China with its nuclear program in the 1950s, had yet to articulate a clear policy on nonproliferation. However, Moscow's decision to terminate nuclear assistance to China by 1960 pointed toward a shifting position on nonproliferation.

At the 1962 meeting, Rusk said that the United States supported a nonproliferation treaty that prevented the further dissemination of nuclear weapons but allowed for 'indirect transfer' of warheads [27]. By 'indirect transfer' the United States was referring to multilateral nuclear sharing agreements, whereby nuclear weapons would be out of the sole possession of the United States, but Washington would still be required to approve any use.

The Soviet Union responded by outlining its own concept of nonproliferation, which prohibited the transfer of nuclear weapons 'through military alliances.' Under the Soviet formula, any possession or control of nuclear weapons by third party



Figure 2.1. US Secretary of State Dean Rusk (right) meets with Soviet Foreign Minister Andrei Gromyko.
Credit: Yoichi Okamoto (LBJ Museum & Library.)

states would be illegal. The Soviet Union also wanted specific language recognizing that both East and West Germany would be denuclearized, meaning that neither state would develop nuclear weapons or allow other states, or military alliances, to station nuclear weapons in their territories.

The Soviet definition was unacceptable to the United States because of the prohibition of nuclear sharing in military alliances. As a result, no real progress was made after the exchange.

The exchange of ideas began again with new saliency in 1963. Resolution of the Cuban Missile Crisis in October 1962 indicated to Kennedy that the United States and the Soviet Union could make progress on nuclear risk reduction. Relatedly, the United States, the Soviet Union, and other states were nearing completion of the 1963 Partial Test Ban Treaty, which prohibited nuclear testing in the atmosphere, outer space, and under water (see figure 2.2). While it was not the full testing ban that some states wanted, the negotiations over the treaty in Geneva again underscored that the United States and the Soviet Union were willing to negotiate on nuclear issues and were both concerned about the risk of proliferation. Both states saw the partial test ban as a means to impede additional states from obtaining nuclear weapons, particularly China. The United States and the Soviet Union were growing wary of China's nuclear aspirations and saw value in measures that might slow down the state's nuclear development. The United States also feared that a nuclear-armed China could provoke regional rivals, such as Japan and India, to pursue nuclear weapons if no instrument existed to legally prevent proliferation.



Figure 2.2. US President John F Kennedy signs the Partial Test Ban Treaty, October 7, 1963. Credit: Abbie Rowe. White House Photographs. (John F Kennedy Presidential Library and Museum, Boston.)

Perhaps most critically in the United States, recognition of the growing number of states capable of producing nuclear weapons spurred efforts to pursue a nonproliferation treaty.

Specifically, in 1963, US Secretary of Defense Robert McNamara told Kennedy that a secret Pentagon study estimated that eight states could develop nuclear weapons in the next ten years: Canada, China, India, Israel, Italy, Japan, Sweden, and West Germany [1]. McNamara proved to be correct about China and India, as Beijing tested a nuclear warhead in 1964 and India tested a nuclear explosive device in 1974. India did initially claim that the 1974 explosion was peaceful, but later admitted it was part of its nuclear weapons program.

McNamara's report further predicted that there could be 25 nuclear-armed states by the 1970s, unless steps were taken to reign-in proliferation. Influenced by the report and the recent memory of the Cuban Missile Crisis, Kennedy characterized the proliferation threat as 'the greatest possible danger and hazard' in a March 1963 speech.

Given the growing political interest in a nonproliferation treaty domestically and at the UN, Kennedy realized that any agreement on nonproliferation required complete agreement and shared understandings between the Soviet Union and the United States on provisions related to the transfer and control of nuclear weapons, a

viewpoint Moscow seemed to share. To that end, the United States shared a draft with the Soviet Union to gauge Moscow's reaction as to how Washington was approaching proliferation.

The initial US draft was based on two basic premises. Article I stated that the nuclear armed states would not transfer nuclear weapons, material, or technologies to states that did not possess nuclear weapons. Article II stated that states without nuclear warheads would commit not to seek the transfer of nuclear weapons, materials, or technologies [2].

The prohibition on transfer did not apply to nuclear sharing arrangements that the United States was pursuing with NATO. The United States also submitted to Moscow an explainer that addressed the NATO MLF nuclear sharing concept for multinational crews that was being pursued at the time. The document detailed how the MLF would comply with the US definition of nonproliferation. The United States also emphasized that nuclear-sharing was the best way to prevent West Germany from pursuing its own nuclear arsenal.

While Khrushchev's position on nuclear sharing had shifted after China's nuclear test and the Cuban Missile Crisis, pursuing the MLF in its current form was still unacceptable. The Soviet Ambassador to the United States, Anatoly Dobrynin, relayed to Washington that the Soviet Union believed that any nuclear sharing arrangements, whether amongst NATO or the Warsaw Pact states, would lead to further proliferation [2]. As mentioned in the preceding section, concern about West German control over nuclear weapons influenced Soviet opposition to the arrangements. That position only hardened when Brezhnev replaced Khrushchev in late 1964.

Despite the impasse with the Soviet Union, the United States continued to pursue its nonproliferation concept with US allies, presenting its draft in July 1965 to NATO to gauge reactions. Generally, there was support amongst NATO allies to pursue a nonproliferation treaty, which allowed multilateral nuclear sharing. However, several states viewed the Soviet rejection of the US concept as troublesome. This led states, including the United Kingdom and Canada, to begin working on their own drafts.

Despite the US failure to gain consensus support from allies, the United States submitted its nonproliferation draft to the UN Disarmament Committee and ENDC August 17, 1965.

The Soviets responded to the US draft by submitting their own text to the ENDC and the UN General Assembly in September 1965 and calling for negotiations based on the concept. The draft put forward by Moscow had a significant difference to the US version, namely states without nuclear weapons would also give up the 'right to participate in ownership, control, or use of nuclear weapons [3].'

The emphasis on giving up the right to 'participate in ownership and control' in the Soviet draft was a direct response to the MLF discussions that were currently underway. The Soviet draft did not mention the current NATO arrangements, but the United States interpreted the phrase 'participate in' as an objection to the current NATO arrangements. Washington did, however, note that the Soviet draft did not seem to prohibit participating in nuclear planning and strategy.

Given that NATO had still not come to an agreement on MLF and the Soviet resistance to the concept, the United States saw an opening after the Soviet Union shared its draft. Washington considered giving up the MLF in exchange for the Soviet Union accepting the current NATO nuclear sharing arrangements, which kept nuclear weapons under US command and control, but allowed NATO allies to participate in the nuclear planning.

The United States also objected to the weak verification measures in the Soviet draft. The Soviet Union wanted to rely solely on national intelligence as a means to provide assurance that non-nuclear-weapons states were not pursuing illicit weaponization activities with peaceful nuclear programs.

Despite the differences in defining what would constitute proliferation, there were some similarities in the texts and areas of consensus between the superpowers. Both the United States and Soviet Union were pushing for a treaty of unlimited duration and neither mentioned disarmament or cessation of an arms race. In fact, both states vocally opposed the inclusion of disarmament measures in the nonproliferation treaty, arguing that it was an issue for the nuclear-weapons states to address.

The UN did not act on either the US or Soviet proposals. Rather, in November 1965, the General Assembly adopted Resolution 2028, based on a memorandum submitted by the eight non-aligned members of the ENDC: Brazil, Burma, Ethiopia, India, Mexico, Nigeria, Sweden and the United Arab Republic (now Egypt). The memorandum outlined key concepts for a treaty and reiterated that nonproliferation measures be ‘coupled with or followed by tangible steps to halt the nuclear arms race [3].’ The memorandum was spurred in part by a June 1965 request from the United Nations Commission on Disarmament for the ENDC to take on the mandate of pursuing a treaty on the nonproliferation of nuclear weapons. The memorandum by the non-aligned eight was an attempt to lay out the key elements for such a treaty.

Resolution 2028 captured many provisions from the memorandum and provided a critical basis for the subsequent negotiations. It laid out five principles for the text:

- (a) the treaty should be void of any loopholes which might permit nuclear or non-nuclear powers to proliferate, directly or indirectly, nuclear weapons in any form;
- (b) the treaty should embody an acceptable balance of mutual responsibility and obligations of the nuclear and non-nuclear powers;
- (c) the treaty should be a step towards the achievement of general and complete disarmament and, more particularly, nuclear disarmament;
- (d) there should be acceptable and workable provisions to ensure the effectiveness of the treaty;
- (e) nothing in the treaty should adversely affect the right of any group of states to conclude regional treaties in order to ensure the total absence of nuclear weapons in their respective territories [4].

Additionally, Resolution 2028 called upon the ENDC to give ‘urgent consideration’ to the nonproliferation of nuclear weapons and ‘reconvene as early as possible with a view to negotiating an international treaty.’ It further requested

that the ENDC submit to the General Assembly a report on its work on a nonproliferation treaty ‘at an early date.’

The United States supported the text put forward by the nonaligned states, despite the disarmament reference, but the Soviet Union wanted more assurance and specificity on the limitations of nuclear sharing. Moscow expressed concern at the UN First Committee in 1965 that a treaty that allowed any nuclear sharing would ‘camouflage’ West Germany’s access to nuclear weapons. The Soviet ambassador told Dean Rusk, US Secretary of State, that West Germany might be seeking control of US nuclear-capable medium range ballistic missiles [2]. Despite Soviet concerns, Resolution 2028 was adopted in November 1965 by a vote of 93–0 with five abstentions, bringing together the political mandate and political will necessary to make progress on a nonproliferation treaty at the ENDC.

2.2 Finalizing nonproliferation language at the ENDC

With the passage of Resolution 2028 in 1965, negotiations over what would become the NPT began in earnest at the ENDC in 1966. The ENDC was co-chaired by the United States and the Soviet Union, and significant negotiations took place bilaterally between the two delegations, particularly when it came to working out the provisions on prohibiting transfer. Both states focused on this element of the treaty throughout 1966 and into 1967.

While there was general agreement that the treaty should prohibit states with nuclear weapons from transferring warheads to other states and helping states develop and manufacture nuclear weapons, and prohibit non-nuclear-weapons states from developing nuclear weapons, the question of what constituted ‘transfer’ was subject to intense debate. Whether or not non-nuclear-weapons states should be permitted ‘control’ over nuclear weapons, and the extent to which allies could participate in nuclear planning, were stumbling blocks.

In January 1966, Johnson sought to address Soviet concern over US nuclear arrangements with NATO. He transmitted to the Soviets that the US was now defining proliferation for the purpose of a treaty as ‘when a non-nuclear nation acquires its own national capability or the right or ability to fire nuclear weapons with the explicit concurrent decision of an existing nuclear nation [6].’

In that letter to Soviet Chairman Kosygin, Johnson argued that the United States and the Soviet Union are ‘much more likely to reach an understanding by agreeing to a precise definition of “proliferation” such as this than by attempting to discuss the question in terms of such a loose concept as “access”.’ Johnson warned, however, that the United States would not enter into any agreement that would ‘deny our allies the possibility of participating in their own defense [5].’

Johnson’s intention in submitting a definition was to assure the Soviet Union that the United States would live up to its NATO alliance commitments, including shared nuclear planning, but the arrangements would not constitute proliferation. Including language on the ‘ability to fire nuclear weapons’ without the concurrent decision of a nuclear state in the definition of proliferation was intended to provide further assurance that West Germany, and other NATO allies, would never have

sole launch authority over US nuclear weapons. Johnson also issued a warning to Kosygin that unless the Soviet Union and the United States acted to conclude a nonproliferation treaty, the ‘real threat of proliferation.... might spread even to Europe [6].’

The United States followed Johnson’s definition with an amended draft, which was submitted to the ENDC in March 1966. This draft included language in Article I that banned states with nuclear weapons from assisting with the manufacture, testing or acquisition of nuclear weapons, even as part of a military alliance.

Despite modification in the March 1966 draft, the Soviet Union continued to express concern over West Germany’s ability to launch a nuclear weapon during a time of war when control of nuclear weapons would be shifted from the United States to NATO. Moscow argued that US assurances that it would not cede the decision to launch nuclear weapons may not apply in that scenario.

During this time, Washington also began to consider abandoning the MLF, given Soviet opposition and the failure to reach consensus amongst NATO member states on a path forward for establishing the force. It was increasingly apparent to Washington that NATO allies would not support an MLF if the United States retained a veto over launch. Several NATO allies were also reluctant to share the costs of the MLF, which the United States was now requesting.

The election of the Social Democrats in West Germany eased the way for the United States to drop the MLF concept. The Social Democrats were less wedded to the concept of greater participation in NATO nuclear sharing arrangements and mixed nationality crews.

Despite the decision to drop the MLF, Washington made clear to NATO and the Soviet Union that the United States would only support a nonproliferation treaty that allowed it to retain the option for consultations on nuclear deterrence arrangements between the United States and NATO.

The decision to drop the MLF opened the door for the United States to hammer out the remaining differences of opinion with the Soviet Union over the draft Articles I and II.

In September 1966 on the sidelines of the UN, Rusk met with Gromyko to ask if the Soviet Union would support a treaty if the United States guaranteed ‘not to surrender under any future circumstance, and whatever the form of nuclear organization in the West, our veto over firing nuclear weapons [6]?’ This position would essentially ensure that NATO would never have full command and control over US nuclear weapons in Europe.

US thinking on this question, driven primarily by McNamara and Rusk, was designed to demonstrate that there was some convergence between the US and Soviet positions on nuclear policy in Europe, namely that neither state saw relinquishing control over the decision to fire nuclear warheads as advantageous. McNamara, Rusk, and Johnson’s special advisor Walt Rostow assessed that NATO allies would still support a treaty, even if the definition of proliferation did not allow them control over the alliances’ nuclear deterrent, because they were seeking an insurance policy, not ‘an independent right to fire [6].’

Rusk also proposed to Gromyko that the United States and the Soviet Union should jointly prepare a new draft of Articles I and II for the ENDC.

Gromyko responded to Rusk by saying if the MLF, and the counterpart proposed by the British, the ANF, were truly off the table, the Soviets would agree to work with the United States on a joint draft of Articles I and II for the treaty. He agreed with Rusk that the success of the treaty would depend on the US and the Soviet Union sharing the same interpretation of the text.

Gromyko also said the Soviets were focused on ‘what is prohibited, not what is allowed’ and reiterated the Soviet position that delivery systems should not be covered by the treaty. The United States interpreted Gromyko’s response as the Soviets agreeing that the current NATO nuclear sharing arrangements, which allowed NATO troops to drill on delivery systems for US nuclear weapons, the warheads of which were under US control, would be acceptable to the Soviet Union [7]. Additionally, Washington took Gromyko’s words to mean that NATO member states could also participate in planning and consultation arrangements for nuclear forces.

With this progress, the United States and the Soviet Union formed joint working groups to reach a common understanding of the meaning of ‘transfer.’ The Soviets dropped their insistence that the treaty include a prohibition on ‘participation in’ nuclear sharing arrangements and a prohibition on ‘access’ to nuclear weapons as part of the definition prohibiting transfer.

The Soviet Union did insist that the definition include prohibiting transfer to a group of states, as well as individual countries, to cover any argument that the prohibition would not apply to NATO as a group.

In return, the United States agreed that the MLF, if it had been created as proposed by Washington, would be considered a violation of the transfer provisions being discussed. While the United States had already assured Moscow that the MLF concept was dead, the Soviet Union’s insistence on prohibiting transfer to a group was designed to ensure that the United States would not pursue an MLF-like arrangement in the future. The Soviet Union further assured the United States that the current nuclear sharing agreement with NATO would be allowed under the treaty as envisioned by the two states at that time.

On September 30, 1966, the United States and the Soviet Union completed a new draft of Articles I and II, which was submitted back to the respective capitals for approval. The version of Article I agreed upon by both states would remain almost unchanged to the final language for the article in the NPT. The final text reads:

Article I

Each nuclear-weapon-State Party to the Treaty undertakes not to transfer to any recipient whatsoever nuclear weapons or other nuclear explosive devices or control over such weapons or explosive devices directly, or indirectly; and not in any way to assist, encourage, or induce any non-nuclear-weapon-State to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices, or control over such weapons or explosive devices.

Article II

Each non-nuclear-weapon-State Party to the Treaty undertakes not to receive the transfer from any transferor whatsoever of nuclear weapons or other nuclear explosive devices or of control over such weapons or explosive devices directly, or indirectly; not to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices; and not to seek or receive any assistance in the manufacture of nuclear weapons or other nuclear explosive devices.

The United States and the Soviet Union also made strides during the September 1966 meetings on some of the procedural issues, including a withdrawal clause based on the recently concluded Limited Test Ban Treaty and an amendment process for changing the treaty. The withdrawal clause gives states the right to leave the treaty if ‘extraordinary events, related to the subject matter of the Treaty, have jeopardized the supreme interest of its country.’ The withdrawal process requires three months’ notice to all state parties [8]. One area where the NPT differed from the Limited Test Ban Treaty in regard to the withdrawal clause is that under the NPT, states are also required to give notice to the UN Security Council and articulate the ‘extraordinary events’ that dictated the decision to leave the treaty. These provisions were relatively uncontroversial.

Despite US and Soviet agreement on the text of Articles I and II, not all of the NATO and Warsaw Pact states supported the compromise. The Soviet Union asked the Warsaw Pact for input on the draft in October. While Romania continued to voice concerns, the rest of the states largely agreed that the text prohibited any form of an MLF, opposition to which remained a central concern for the Warsaw Pact states.

In mid-December, the United States shared the draft with allies. Although not all of the NATO states supported the agreed text, at a ministerial meeting of NATO, December 12, the body created the Nuclear Defense Affairs Committee and a Nuclear Planning Group to reflect the permanence of the nuclear sharing arrangements currently in existence.

West Germany, however, was still not convinced that the Soviet Union was sincere in its support for a nonproliferation treaty and asked the United States for answers to several questions in January 1967, designed to provide assurance that the treaty would not compromise Bonn’s security concerns. The United States, in response to the questions from Bonn, reiterated that Washington had Soviet support that the treaty would:

1. not hold during times of general war,
2. allow current nuclear consultations and NATO arrangements,
3. allow for US modernization of nuclear forces in Europe,
4. allow forward basing of nuclear weapons, and
5. allow ownership, handling of, and training on delivery systems that were not mated with real warheads [9].

Finally, in August 1967, the United States and the Soviet Union submitted identical drafts of Articles I and II to the ENDC. Both Moscow and Washington were also satisfied that they shared the same interpretation of these provisions and

the text was relatively acceptable to their respective allies. These articles remained virtually untouched for the next year as states concentrated on finalizing the other provisions for the treaty.

2.3 The nonaligned push on disarmament

While the concept of linking nonproliferation and disarmament commitments in the same treaty was explored in the 1961 UN General Assembly resolution sponsored by Ireland, the United States and the Soviet Union focused heavily on the nonproliferation elements of the treaty once negotiations began at the ENDC.

Between 1961 and the commencement of negotiations, the nuclear arsenals in both states continued to grow, adding to the political impetus that legally binding steps on disarmament needed to go hand in hand with nonproliferation.

While the United States and the Soviet Union were focused on drafting Articles I and II, the eight nonaligned members of the ENDC were urging that nonproliferation and disarmament be linked in the draft treaty.

In February 1965, India argued at the ENDC that any treaty which ‘keeps all limitation on non-nuclear-weapons countries while allowing nuclear-weapons countries to continue to manufacture nuclear weapons and delivery vehicles’ is ‘spurious.’ Later in August of that year, India again said that it would be ‘unrealistic and irrational’ to impose conditions on states without nuclear weapons while nuclear powers ‘hold on to privileged status’ and increase stockpiles of nuclear weapons [10].

This position was supported by some states at the ENDC that were allied with Washington or Moscow, which was unsurprising, given the past positions of some NATO and Warsaw Pact states on disarmament. In 1962, for instance, when the United States met with NATO allies to discuss its initial concept of a nonproliferation treaty, Italy, supported by West Germany, pushed back against requiring states without nuclear weapons not to pursue them unless there was a reciprocal commitment from states with nuclear weapons to eventually disarm [23]. While this was a NATO specific discussion, like the Irish resolutions, it contributed to linking nonproliferation with disarmament.

Despite pressures at the onset for the treaty to reference disarmament, early drafts submitted by the United States and the Soviet Union focused on preventing proliferation and did not include specific commitments to eliminate nuclear arsenals or end the arms race.

In response to what many states viewed as an unbalanced treaty draft focusing solely on nonproliferation, Italy drafted its own proposal, which was submitted to the ENDC in 1965. The Italian draft called for a short-term declaration by states without nuclear weapons to renounce pursuing them, and to review progress toward halting the arms race and reducing nuclear arsenals within two years. That review would inform the decisions by non-nuclear-weapons states to extend their renunciation declarations. Italy argued that this would allow states to revisit the question of nuclear weapons if their security was threatened by the US–Soviet arms race [15].

While the Italian and non-aligned eight efforts did not advance in the ENDC, the statements did influence UN General Assembly Resolution 2028, described in

the prior section, that contained the guiding principles for the NPT, including language noting that the treaty should be a step toward ‘general and complete disarmament.’

The emphasis on disarmament in the resolution was critical, as the United States and the Soviet Union were opposed to legally binding nonproliferation and disarmament commitments in the same treaty.

The United States initially said it would support the principle of the resolution if it were not interpreted to mean a package agreement on nonproliferation and disarmament in the treaty text itself. The Soviet Union took a slightly different approach and argued that nonproliferation efforts would be complicated by the security concerns related to disarmament and that any linkage could impede negotiations of a successful nonproliferation treaty.

When the ENDC re-convened in Geneva in 1966 after UN Resolution 2028 passed, states continued to debate how to link the concepts for a nonproliferation treaty under discussion to disarmament. To achieve the intention of the non-aligned eight, the United Arab Republic (Egypt) proposed that the treaty text include a legal obligation to halt the nuclear arms race and ‘limit, reduce, and eliminate stocks of nuclear weapons and delivery vehicles.’ The United Arab Republic proposed that the treaty should ‘expedite negotiations in order to reach agreement on concrete measures’ to achieve disarmament [23].

Cairo also argued that states party to the treaty should be permitted to withdraw if nuclear-weapons states did not observe the commitments to make progress toward disarmament.

The United Arab Republic intervention at the ENDC influenced a new memorandum from the non-aligned eight that called for the inclusion of tangible steps, such as banning all nuclear testing (at this point underground testing was still legal), halting fissile material production for nuclear weapons, and reducing stocks of nuclear warheads. The 1966 memorandum also called for security assurances for states that renounced nuclear weapons. The United States, however, also opposed language on security assurances. Washington maintained that security assurances ‘because of its complexity and the divergent interests involved, cannot be dealt with in the treaty [8].’ The United States did agree to look into options to address security assurances at the UN.

When the non-aligned eight began discussions on a ‘third way’ proposal to counter the US and Soviet drafts that included legally binding steps to reduce nuclear arsenals and put nuclear facilities in nuclear-armed states under safeguards, the United States exerted pressure on the states backing the proposal to abandon it [23]. While Washington succeeded in that effort, the states continued to push for including disarmament measures in the NPT text itself.

By 1967, the Soviet Union and the United States were still not convinced that disarmament should be specifically addressed in the treaty. The identical drafts submitted in August 1967 still did not contain any binding disarmament measures, although, in a nod to the 1966 memorandum from the non-aligned eight, preambulatory language noted a ‘declaration of intention to achieve at the earliest possible date cessation of the nuclear arms race.’ Language in the preamble also

called for ‘elimination from national arsenal of nuclear weapons and the means of their delivery’ pursuant to a disarmament treaty [8].

Mexico proposed amending the drafts to include an article on disarmament. Unlike the past effort from the non-aligned eight, Mexico steered clear of imposing specific, legally binding deadlines. The initial Mexican proposal called for:

Each nuclear weapon state party to the treaty undertakes to pursue negotiations in good faith, with all speed and perseverance to arrive at further agreements regarding the prohibition of nuclear weapon tests, the cessation of the manufacture of nuclear weapons, the liquidation of their existing stockpiles, the elimination from nuclear arsenals of nuclear weapons and the means of their delivery, as well as to reach agreement on a treaty on general and complete disarmament under strict and effective international control [20].

While the Mexican amendment was the only proposal to reference general and complete disarmament, a number of other states, including Brazil, India, Romania, and Switzerland, also proposed that language calling for steps toward nuclear disarmament should be included in the treaty.

The arguments convinced the British, a nuclear-armed state actively participating in the negotiations at the ENDC, to support the addition of disarmament language in the text.

To bridge the disarmament divide, Canada led a group of states in 1967 to compromise disarmament language in the treaty that drew heavily on the Mexican amendment. Canada proposed that the text reflect that nuclear-weapons states intended to pursue disarmament steps, an option that the United States and the Soviet Union appeared to support, although both Moscow and Washington objected to the inclusion of specific steps, such as a test ban and fissile material production ban, listed in the Mexican amendment and steps tied to specific timelines.

The Canadian initiative led to preambulatory language in the draft that reiterated the intention of all states to pursue a treaty on general and complete disarmament. This position was reflective of the US attitude toward disarmament at the time, namely that no state would give up nuclear weapons without confidence that there were no threats of nuclear proliferation to national security interests and that any adversaries were similarly disarmed.

The preambulatory language, however, did not satisfy all of the ENDC states. Mexico, in particular, still wanted an article in the treaty that specifically addressed good faith negotiations to pursue specific objectives toward disarmament. Whereas the preambulatory language would be nonbinding, an article would legally commit the nuclear-weapons states to fulfill the agreed upon disarmament steps. Mexico also argued that including disarmament commitments in the body of the treaty would give equal weight to nonproliferation and disarmament provisions.

As one of the states driving the treaty being negotiated on the region free of nuclear weapons in Latin America, Mexico had critical support from the states in the region. The United States in particular was beginning to view support from the Latin American block as crucial to the success of the final text being adopted at the UN.

Mexico was successful, in part, in its push for inclusion of a disarmament article. In January 1968, when the United States and the Soviet Union circulated a draft with the language agreed upon in Articles I and II, the text included Article VI, which addressed the question of disarmament.

As initially drafted, Article VI called for good faith negotiations on stopping the arms race, disarmament, and a future treaty that addressed general and complete disarmament. For several ENDC states, including India and Brazil, who pushed for specific steps toward disarmament to be included in the treaty, the ‘good faith’ effort was not sufficient [20]. India went so far as to say in April 1967 that ‘if disarmament is not the next step, India is reluctant to give up the option to build nuclear weapons [22].’ For this, and other reasons, India did not support the NPT in 1968 when it was opened for signature.

Despite the push by these states for more specific timelines and actions to advance disarmament, the US and Soviet negotiators took a common position that specificity on the disarmament article would risk the success of the NPT negotiations.

Given the unified position of the United States and Soviet Union, further pushes by the nonaligned ENDC states failed to achieve inclusion of specific steps, and the text of the article was only slightly modified in the two months that followed.

Article VI, as it currently reads, was finalized in March 1968.

The text reads:

Article VI

Each of the Parties to the Treaty undertakes 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, and on a treaty on general and complete disarmament under strict and effective international control.

Concern over the lack of timelines for disarmament also led to the initial duration of 25 years for the treaty. The joint draft submitted by the United States and the Soviet Union in August 1967 initially called for a treaty of unlimited duration. The United States argued that an unlimited duration would ‘inspire confidence and a firm basis for further arms control measures’ and that any adjustments required would be possible through the amendment process and the five-year review conference [8].

The United Kingdom joined some of the non-aligned states to argue that the treaty must provide a ‘means of redress’ for non-nuclear-weapons states if the states possessing nuclear weapons are ‘unreasonably slow’ in taking action to halt and reverse the nuclear arms race.

This British point helped to convince the United States and the Soviet Union to amend the treaty draft to include a duration of 25 years, with the possibility for extension in the future. The January 1968 identical drafts contained this new language. Some of the non-aligned states wanted text included that would give states an ‘easy’ option to withdraw from the treaty at the 25 year mark, but the United States and the Soviet Union succeeded in arguing that one withdrawal procedure was sufficient.

Additional articles in the treaty, such as the right to withdraw and tying the question of extending the treaty to a review of its operation after 25 years in

Article X, were included in part to provide the non-nuclear-weapons states with the ‘means of redress’ to assess progress on disarmament emphasized by the United Kingdom and others.

While excluding specific steps on disarmament in 1968 helped to wrap up negotiations on the treaty, definitional questions as to the obligations in Article VI and allegations from non-nuclear-weapon states that disarmament is not being pursued in good faith, are widening the divide between NPT member states. This debate is further explored in section 4.2.

2.4 International versus regional safeguards

From the outset, it was clear that the success of any nonproliferation treaty would be contingent upon its verification provisions. As civil nuclear programs had dramatically expanded after the 1953 ‘Atoms for Peace’ speech by Eisenhower, the question of verifying peaceful uses was particularly challenging as many of the reactors supplied by the United States, the Soviet Union, and France during that period used highly-enriched uranium suitable for nuclear weapons development and produced spent fuel containing plutonium which could also be reprocessed for nuclear weapons.

Given that a number of states developing civil nuclear programs had not ruled out weaponization programs, ensuring that nuclear materials and technologies in these states remained exclusively peaceful would prove critical to providing assurance that the treaty was meeting its intended goal of preventing proliferation. Without confidence in verification, states would be unlikely to agree to join the treaty.

However, it was clear early in the negotiations over defining prohibited nuclear activities that there were significant differences between the United States and the Soviet Union over how to verify peaceful uses, or safeguards as it is commonly known. Given the gap, the United States and the Soviet Union largely left the question of how to address safeguards in the text until after agreement was reached on Articles I and II.

Complicating the verification question was the existence of different regimes that already played a role in ensuring peaceful uses.

The ‘Atoms for Peace’ speech, as explained above, led to the formation of the IAEA. The IAEA’s safeguards role was based on verifying that nuclear facilities and nuclear materials are not misused or diverted from peaceful purposes. The IAEA uses the information made available to it, as well as on-site inspections, to draw a conclusion as to the correctness of a state’s declaration about its nuclear program. Inspectors are drawn from an array of states to prevent bias [11].

However, IAEA safeguards inspections were not mandatory at the time and not all states with nuclear programs had accepted agency monitoring and verification over their nuclear reactors and activities. The United States put a nuclear reactor under safeguards in 1963 in the hopes of spurring additional states to pursue IAEA safeguards, but the process of achieving buy-in was slow. Additionally, US negotiators noted that a number of states were skeptical about the IAEA’s ability to ‘perform a comprehensive nuclear nonproliferation safeguards assignment,’ noting that to date the agency had demonstrated a reluctance to ‘move forward

vigorously' in planning for an expanded safeguards role [12]. Even the United States admitted it would require an 'impressive effort' for the IAEA to handle the additional capacity required for safeguards implementation. To demonstrate its ability to conduct safeguards at the level required for the NPT, the IAEA held a meeting in August 1967 to invite states with technical safeguards experience to provide advice and improve the technological basis of the IAEA's approach. The IAEA also worked up a plan for expanding its safeguards department (see figures 2.3 and 2.4).

The IAEA was not the only body conducting inspections at the time to ensure peaceful purposes. Until the IAEA safeguards regime was defined, the United States had concluded bilateral safeguards arrangements with states that received US assistance in developing civil nuclear programs, although Washington was working to convert these arrangements to the IAEA after the body's safeguards practice was developed.

Additionally, the European Atomic Power Authority (Euratom), the common nuclear energy market in Europe founded in 1957, had its own safeguards system for member states. Euratom viewed its approach as sufficiently robust and did not pursue an agreement with the IAEA once the agency's safeguards regime was defined. Euratom's safeguards included similar measures to the IAEA. Inspectors, all from Euratom states, would verify the accountancy of nuclear materials and the purpose of nuclear facilities, to ensure that all activities were exclusively peaceful and materials were not being diverted for military means [13].



Figure 2.3. The IAEA formed a safeguards committee to form guidelines for concluding safeguards agreements after the NPT was finalized. Credit: IAEA.



Figure 2.4. The IAEA displays some of the technology used to conduct safeguards at the 1980 NPT Review Conference. Credit: IAEA.

At that point six states were participating in Euratom, but the group was not well represented at the ENDC, given that France refused to fill its seat and participate in the negotiations. At the time, France was also blocking the United Kingdom from joining the European Common Market, of which Euratom was a part, and went so far as to denounce the negotiations on the treaty, saying it would create new threats to world peace because it did not deal with disarmament [14]. Only Italy was truly represented in both Euratom and the ENDC. Due to the poor representation, Euratom's safeguards were not well understood at the ENDC, weakening the case for regionally-based measures.

The United States originally tried to work with NATO allies to develop a consensus position on the role of safeguards in the NPT, but Washington struggled to develop a proposal supported by the group's member states. This was unsurprising given that the US emphasis was on an IAEA-based safeguards system that covered materials and facilities while many NATO allies, as members of Euratom, favored a regionally based approach and thought that the Euratom system was sufficient. Belgium, Luxembourg, and the Netherlands, seemed inclined to accept IAEA inspections, in addition to Euratom measures, if necessary to achieve the NPT, whereas Germany and Italy did not [15].

One of the primary concerns for the Euratom states about agreeing to IAEA safeguards, or any new international regime mandated by the NPT, was the risk of Soviet participation on inspection teams. Given the existence of the Euratom measures, the risk of allowing non-Europeans access to civil nuclear programs seemed unduly high and unnecessary to guard against proliferation. Relatedly, the safeguards provisions being discussed would only apply to nuclear-weapons states, freeing nuclear-weapons states from the risk of industrial espionage.

Some in the United States, in recognition of Italian and German concerns over international inspectors, initially weighed the notion of leaving out safeguards from the treaty altogether. That viewpoint, however, was overruled by the argument that states would not join the treaty without assurances that it could be implemented.

The August 1965 treaty draft that the United States submitted to the ENDC reflected Washington's failure to develop a strong consensus position on safeguards with its allies. The Article III provisions in the draft were vague and offered non-nuclear-weapons states a choice between IAEA safeguards or an 'equivalent safeguards' regime to provide assurance that all nuclear activities were peaceful.

The US acknowledged the vague nature of Article III when presenting the draft, noting that the article did 'not set forth precise or completely formulated obligations, but it does indicate a line of policy which all parties undertake to implement [23].'

The Soviet Union rejected the idea that regional safeguards measures could be pursued in lieu of adherence to international standards. The Soviet Union viewed allowing Euratom safeguards to be sufficient under the NPT as akin to an endorsement of 'self-inspections' and that it would be better to have no safeguards included in the treaty than endorse Euratom's safeguards [8].

Moscow argued that IAEA inspections, which the Soviet Union had participated in developing, should be a requirement for all states without nuclear weapons, and if Warsaw Pact states were to accept IAEA inspectors, some of whom might come from NATO states, Euratom must agree to the same treatment. The Soviet Union also argued that accepting Euratom's safeguards would set a bad precedent and might invite other regions to set up safeguards regimes that may not be adequate [8]. Other states in the ENDC, such as Sweden and India, were sympathetic to the Soviet Union's argument.

For the United States, eliminating safeguards provisions was not an option. Washington argued that safeguards were necessary for states to trust the nonproliferation elements of the treaty. Additionally, the United States saw the inclusion of safeguards as a way to demonstrate to the Soviet Union that verification and monitoring elements were a critical part of the arms control agreements [8].

Further strengthening the case for stronger safeguards, the 1965 UN General Assembly resolution laying out the guiding principles for the treaty negotiation at the ENDC called for a treaty 'devoid of any loopholes' and containing 'acceptable and workable provisions to ensure the effectiveness of the treaty.' It did not specifically mention either the IAEA or a regional safeguards approach. But the resolution's language clearly precluded any imprecision in defining the requirements for safeguards, as the United States had attempted to do in its draft three months earlier.

In a separate attempt to address the concern posed by 'self-inspection,' and garner support for an international approach, Poland and Czechoslovakia, both Warsaw Pact states, proposed in September 1966 that they would accept IAEA safeguards if West Germany was willing to negotiate its own safeguards agreement, independent of Euratom, with the IAEA [2]. That effort did not gain traction or bridge the divide between the regional and internationally focused camps.

After the vague Article III language initially proposed by the United States was clearly rejected, the US Arms Control and Disarmament Agency (ACDA) sought to broker a compromise between supporters of international safeguards and those states, primarily in Euratom, that favored a regional approach. The revised position that the United States proposed in 1966 called for ‘the acceptance by non-nuclear-weapon states of the IAEA or equivalent international safeguards on all their peaceful nuclear activities [8].’ The United States included Euratom as ‘equivalent international safeguards.’ The Soviets still refused to accept Euratom safeguards as equivalent, but did recognize and accept that a transition period to move from Euratom safeguards to IAEA safeguards would be necessary.

Given the Soviet Union’s insistence on an international standard for safeguards and willingness to accept a transition period for Euratom, the United States proposed that the NPT require IAEA safeguards, but a separate transitional declaration would allow Euratom and the IAEA to agree upon a safeguards approach. The United States enumerated some possible ideas for integrating Euratom and IAEA safeguards, including allowing the IAEA to verify Euratom safeguards, conducting parallel IAEA inspections, or undertaking joint inspections [8].

During the transition time, IAEA safeguards would apply to any exports from Euratom.

The initial response by Euratom member countries was mixed, with some states interested in the compromise proposal while others, particularly Italy and West Germany, continued to reject arrangements that could lead to Soviet inspectors in European nuclear facilities. They also viewed additional IAEA inspectors on top of Euratom safeguards as redundant.

In acknowledgment of the concerns expressed by West Germany and Japan and others about Soviet inspectors and industrial espionage, the United States and the United Kingdom offered to place their civil nuclear facilities under safeguards. The Soviet Union still remained opposed to any nuclear weapons being subjected to safeguards provisions, which reduced the impact of the gesture that Washington and London were trying to make. The Soviet Union did, however, make clear that it would press for the Warsaw Pact states to accept IAEA safeguards included in any future treaty.

As a result of the impasse, the US draft submitted in 1966 did not contain any language on safeguards. The United States then attempted in March 1967 to persuade Euratom to accept a treaty that allowed a transition period to IAEA safeguards, but to no avail.

At this point, the United States and the Soviet Union began engaging in more informal, technical-level talks over the safeguards language in Geneva while ambassadorial-level discussions focused on the nonproliferation language in Articles I and II.

George Bunn, a US official at ACDA, worked up a new draft proposal on safeguards language based on negotiations on the Latin American Nuclear Weapon Free Zone Treaty, known as the Treaty of Tlatelolco, existing IAEA protocols, and earlier drafts of Article III that were never presented to the ENDN because European allies had rejected the ideas prior to consideration [16]. These ideas

included the US concept that IAEA inspectors could oversee or verify Euratom's own safeguards regime. The draft produced by Bunn was presented to the Soviet technical team for reactions and feedback.

Bunn also drew on a Soviet proposal by Roland Timberbaev that IAEA safeguards would be required for all non-nuclear-weapons states, but could be applied 'either individually or together with other states.' Inclusion of this language in Article III, paragraph four, would allow Euratom to conclude a safeguards agreement with the IAEA, rather than each state participating in Euratom negotiating individual safeguards agreements. It would also leave the question of defining oversight to the IAEA itself, rather than being dictated by the treaty. This language would ensure that the IAEA standards were the only acceptable measure for safeguards.

The new Article III draft would also require all states party to the treaty to negotiate safeguards with the IAEA and refrain from providing special fissionable material, or equipment or material to produce it, to any non-nuclear-weapons state, unless the material is under safeguards. Language was also included to specify that the application of safeguards was not intended to hamper access to peaceful nuclear technology—an important point for the states without nuclear weapons that wanted to pursue peaceful programs.

Given that these talks took place on a technical level, Bunn and Timberbaev's teams reported the draft back to their respective capitals in November 1967 for review, not as compromise text, but as delegation drafts. Despite preliminary acceptance of the drafted language (November 2), Moscow was concerned that some Euratom states were still objecting to the idea of IAEA inspectors conducting safeguards at Euratom facilities.

The United States briefed its allies on the November 1967 draft Article III text and emphasized that the application of safeguards as written in Article III would be 'even-handed and nondiscriminatory.' US officials also pointed out that the language allowing safeguards agreements to be conducted with the IAEA 'as a group' qualified Euratom as a 'partner' with the IAEA in applying safeguards. Washington said it would make an interpretive statement to this effect [17].

At one point, West Germany requested that the United States refrain from ratification of the NPT until Euratom and the IAEA worked out a safeguards agreement, but the United States would not commit to that approach [18].

The United States and the Soviet Union continued to discuss the draft in December 1967 and began considering tabling a draft with Article III language in January 1968. Given the March 15, 1968 deadline for transmitting a draft to the UN, the United States and the Soviet Union were both feeling the pressure to conclude the treaty.

On January 3, 1968, Samuel DePalma, assistant director for ACDA, met with Yuly Vorontsov, Soviet counselor at the embassy to discuss the Article III draft. DePalma emphasized to Vorontsov that the Article III draft from November was 'the only formulation we felt we could persuade our allies to accept.' Voronstov said that the Politburo was considering the Article III draft, an unusual step for the

negotiations, and said the Soviet Union may want additional language noting that safeguards would apply equally to all non-nuclear parties [19].

Ultimately the Soviet Union accepted the November 2 proposal and the United States and the Soviet Union included the drafted language for Article II in the treaty text submitted to the ENDC on January 18, 1968.

While Euratom members could not reach a consensus decision to endorse the Article III draft, the formulation was more acceptable than past drafts because Euratom would be negotiating its own safeguards agreement with the IAEA. While Euratom still did not endorse the final text in 1968, Euratom states, with the exception of France, signed the NPT, but most waited to ratify until the Euratom safeguards agreement with the IAEA was reached.

The final text reads:

Article III

- 1. Each non-nuclear-weapon State Party to the Treaty undertakes to accept safeguards, as set forth in an agreement to be negotiated and concluded with the International Atomic Energy Agency in accordance with the Statute of the International Atomic Energy Agency and the Agency's safeguards system, for the exclusive purpose of verification of the fulfilment of its obligations assumed under this Treaty with a view to preventing diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices. Procedures for the safeguards required by this Article shall be followed with respect to source or special fissionable material whether it is being produced, processed or used in any principal nuclear facility or is outside any such facility. The safeguards required by this Article shall be applied on all source or special fissionable material in all peaceful nuclear activities within the territory of such State, under its jurisdiction, or carried out under its control anywhere.*
- 2. Each State Party to the Treaty undertakes not to provide: (a) source or special fissionable material, or (b) equipment or material especially designed or prepared for the processing, use or production of special fissionable material, to any non-nuclear-weapon State for peaceful purposes, unless the source or special fissionable material shall be subject to the safeguards required by this Article.*
- 3. The safeguards required by this Article shall be implemented in a manner designed to comply with Article IV of this Treaty, and to avoid hampering the economic or technological development of the Parties or international co-operation in the field of peaceful nuclear activities, including the international exchange of nuclear material and equipment for the processing, use or production of nuclear material for peaceful purposes in accordance with the provisions of this Article and the principle of safeguarding set forth in the Preamble of the Treaty.*
- 4. Non-nuclear-weapon States Party to the Treaty shall conclude agreements with the International Atomic Energy Agency to meet the requirements of this Article either individually or together with other States in accordance with the Statute of the International Atomic Energy Agency. Negotiation of such*

agreements shall commence within 180 days from the original entry into force of this Treaty. For States depositing their instruments of ratification or accession after the 180 day period, negotiation of such agreements shall commence not later than the date of such deposit. Such agreements shall enter into force not later than eighteen months after the date of initiation of negotiations.

2.5 The influence of Tlatelolco on the NPT

While negotiations over the NPT were ongoing, Latin American countries were pursuing a concept originally introduced by Brazil in 1962: the creation of a region free of nuclear weapons. This was not the first time that a treaty was used to ban nuclear weapons from a geographically defined space. The 1961 Antarctic Treaty declared that zone nuclear-weapons free. However, the Latin American endeavor was the first negotiated treaty to establish a zone free of nuclear weapons concluded by states, some with civil nuclear programs, to cover their respective territories. As a result, the negotiations significantly influenced key portions of the final text of the NPT.

In July 1964, the Organization for African Unity introduced a resolution for a similar concept covering the African continent, and noting that the territory should be respected as a denuclearized zone. While the UN General Assembly endorsed the organization's declaration, negotiations on a treaty formally establishing it did not take place until 1991.

The Brazilian proposal, offered just weeks before the Cuban Missile Crisis, garnered support from the Organization of American States (OAS), which passed a resolution supporting efforts to create such a zone. The UN General Assembly shortly followed with a resolution endorsing the concept in November 1963 that called for the creation of a drafting committee. The committee met for four main sessions to draft the treaty between 1965–7 before opening up the Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean, or the Treaty of Tlatelolco as it is widely known today, for signature February 14, 1967. Several states represented at the ENDC, including the United States, were invited as observers to the negotiations.

US support for the zone was driven primarily by two motivations. After the Cuban Missile Crisis, the idea of preventing any additional nuclear weapons in the region either by indigenous development or transfer was appealing from a security perspective. Washington also hoped progress on the zone would spur efforts to advance a nonproliferation treaty, which was still bogged down over disagreements with the Soviet Union, primarily over the MLF and NATO nuclear sharing in 1962 and 1963 when the OAS and the UN General Assembly passed resolutions supporting the concept [20].

The negotiations over the Latin America nuclear-weapon-free zone had a direct impact on three articles in particular; Article IV dealing with the right to develop peaceful nuclear programs, Article V on peaceful nuclear explosions, and Article VII on establishing zones free of nuclear weapons.

The inclusion of an article addressing the right of states to negotiate zones free of nuclear weapons was relatively uncontroversial. Influenced by the Latin American process, the 1965 UN General Assembly Resolution 2028, which laid out the principles for the nonproliferation treaty and requested the ENDC to take up negotiations on the text, specified that the treaty should not adversely affect the right of any group of states to conclude regional arrangements to ‘ensure the total absence of nuclear weapons in their respective territories.’

The resolution and ongoing negotiations on the Treaty of Tlatelolco reaffirmed to Mexico, an ENDC participant, that the nonproliferation treaty should include an article on the establishment of nuclear-weapon-free zones.

Mexico’s support for the concept met with little resistance at the ENDC. The Soviet Union had long supported regions free of nuclear weapons, dating back to the Unden Proposal in the UN General Assembly in 1961. The United States, which had opposed the Unden Proposal, was less inclined to reject the creation of zones now, given that the NPT would clearly allow nuclear sharing arrangements with NATO, and Washington was supporting the Latin American zone negotiations.

In recognition of Mexico’s push in 1966 to develop language on zones and the UN General Assembly Resolution 2028, the United States and the Soviet Union included language in the preamble of the identical August 1967 drafts that was largely duplicative to the principle expressed in the UN resolution.

Mexico, with support from other ENDC states, pushed for the United States and the Soviet Union to move the language from the preamble to a separate article in the treaty. Mexico drafted language for the new article, which the United States and the Soviet Union agreed to include as Article VII in the identical drafts circulated in January 1968.

The text of Article VII remained unchanged from the January 1968 draft to the final treaty. Brazil did attempt to amend Article VII in February 1968, calling for recognition of zone treaties already agreed upon as not being affected by the nonproliferation treaty. Brazil was motivated by a section in the Treaty of Tlatelolco that allowed states to conduct peaceful nuclear explosions. As discussed later in this section, it was increasingly apparent that the NPT would prohibit such activities. By amending the NPT to recognize zone treaties already negotiated, Brazil was likely attempting to grandfather in the right to conduct peaceful nuclear explosions into the NPT [20].

Guyana also attempted to amend Article VII during the debate over the treaty at the UN General Assembly after the treaty was reported to that body in 1968. Guyana wanted Article VII to recognize that regional treaties should not be discriminatory toward any states within the region covered by the zone. Guyana was motivated by its exclusion from the Treaty of Tlatelolco due to a territorial dispute with Venezuela left over from British colonial rule of Guyana, which lasted through 1966 [20]. The Treaty of Tlatelolco prohibited any states from being admitted while outstanding territorial disputes existed. Guyana’s amendment failed to pass.

The final text reads:

Article VII

Nothing in this Treaty affects the right of any group of States to conclude regional treaties in order to assure the total absence of nuclear weapons in their respective territories.

After the NPT entered into force, in addition to the Treaty of Tlatelolco, four additional nuclear-free zone treaties were negotiated: the 1985 Treaty of Rarotonga, covering the South Pacific, the 1995 Treaty of Bangkok, covering Southeast Asia, the 1996 Treaty of Pelindaba, covering Africa, and the 2006 Treaty on a Nuclear-Weapon-Free Zone in Central Asia (see figure 2.5). The treaties all contain protocols for the five nuclear-weapons states to ratify that commit each state to respecting the zone, except for the Treaty of Bangkok which has yet to conclude protocol text. All five nuclear-weapons states have ratified the protocol to Tlatelolco and all five, except the United States, have ratified the protocols to the other three zones. The five nuclear-weapons states also agreed to respect Mongolia as a nuclear-weapon-free zone in 2012.

In addition to motivating language on the zone, the Treaty of Tlatelolco was also instrumental in providing a basis for Articles IV and V.

The inclusion of what would become Article IV and Article V was driven largely by the non-nuclear-weapons states at the ENDC, particularly Mexico and Brazil, out of concern that failure to include language on peaceful purposes could lead to a monopoly over nuclear technology and research that would disadvantage non-nuclear-weapons states. The two states argued that once states had foresworn developing or acquiring nuclear weapons they would have little leverage to gain

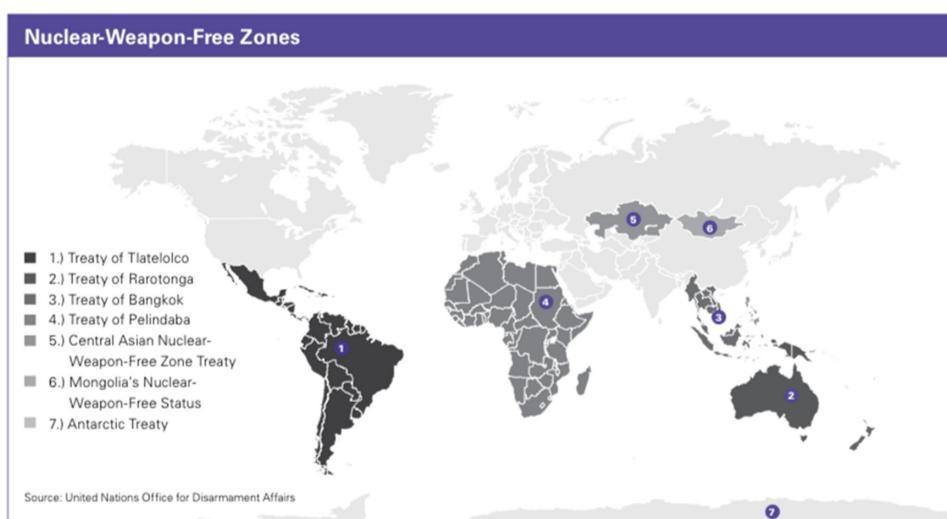


Figure 2.5. Article V of the NPT allows states to draft treaties creating nuclear-weapon-free zones. Seven such zones currently exist. Credit: Arms Control Association.

access to nuclear technology of peaceful purposes if states with nuclear weapons refused to share it [20].

Tlatelolco expressly addressed the point of access to technology, as it contained an article noting that nothing in the treaty ‘shall prejudice the rights of the contracting parties, in conformity with the Treaty, to use nuclear energy for peaceful purposes.’ The treaty also created a control system for verifying ‘that explosions for peaceful purposes are compatible’ with the treaty [21].

The concerns of Mexico, Brazil and others were reinforced by the drafts the United States and the Soviet Union introduced in 1965 and the US amendments in 1966, neither of which contained references to accessing nuclear technology for non-weapons purposes, either in the articles or preambulatory language.

The fear of a monopoly over nuclear technology and research was further driven by a debate in the ENDC in August 1966 over peaceful nuclear explosions. In response to a question about peaceful nuclear explosions, the US said the treaty would not allow states to conduct such explosions. The United States and Soviet Union generally viewed peaceful nuclear explosions as in the domain of the nuclear-weapon states, a point to which a number of ENDC participants adamantly objected, particularly Brazil and India [22]. Both of these states saw an advantage to securing the right to conduct peaceful nuclear explosions for research and civil projects. Washington and Moscow’s rejection of access to peaceful explosions prompted fears that the Soviet Union and the United States sought to deny access to a broader range of nuclear technologies.

It was not just the global south that feared the nonproliferation treaty could create a nuclear monopoly. In April 1967, West Germany wrote a memo on the importance of the treaty guaranteeing access to nuclear energy without restriction [23]. Willy Brandt, West Germany’s Foreign Minister, reiterated this point in an April 27, 1967 speech to the parliament when he said that the state would not accept any treaty that hindered access to nuclear energy.

Initially the United States and the Soviet Union were split over the question of including language on access to nuclear technology for peaceful purposes. The Soviets favored inclusion, but Washington initially opposed provisions committing nuclear-weapon states to sharing any technology or materials to advance peaceful nuclear programs. The Soviet Union ultimately prevailed, assisted by the growing recognition by the United States that support from the Latin American states would be crucial to the success of the treaty, and the identical drafts of August 1967 contained language on access to peaceful uses in Article IV of the draft.

The first paragraph of Article IV in the 1967 draft remained largely intact throughout the continued drafting of the treaty. Paragraph one stated the inalienable right to research, production, and use of nuclear technology for energy and peaceful purposes, in conformity with Articles I and II.

The draft also included language noting the right of states party to the treaty to ‘contribute alone or in cooperation’ to further develop peaceful nuclear programs.

As written in the August 1967 draft, however, Article IV was considered inadequate by many non-nuclear-weapons states at the ENDC. The head of

Mexico's delegation to the ENDC, Jorge Castaneda, pushed for the provision of technology from nuclear-weapon states to be a 'duty' for nuclear-weapon states and non-nuclear-weapons states with advanced civil programs. Castaneda feared that, as written, Article IV's language on contributing to peaceful nuclear programs as a 'right' implied that it was an option that nuclear-weapons states could engage in if they chose to do so [20]. Mexico and other states in the global south were concerned that a few states would create a monopoly over nuclear technology, and without a legally binding commitment to provide assistance, states would be denied access to nuclear technology under the guise of preventing proliferation.

Not all states supported Mexico's proposal that contributing to the development of peaceful nuclear programs should be a 'duty.' Canada argued that 'duty' could imply an obligation to fulfill any request for assistance to non-nuclear-weapons states [23]. The United States also viewed 'duty' as implying a sweeping obligation that was unacceptable. The draft submitted in 1968 worked to bridge the gap between the positions on 'duty' by using language that referenced cooperation as an obligation. The compromise text said, 'states in a position to do so shall also cooperate' alone or together to further develop nuclear energy for peaceful purposes, particularly in non-nuclear-weapons states.

Mexico also wanted the inalienable right to access nuclear technology to be separated from the right of all states to participate in exchanges of information on peaceful uses of nuclear energy. Mexico prevailed in this argument and the 'right to participate' section, including the new language implying an obligation to assist, was separated out into a second paragraph in Article IV in the January 1968 draft.

The January 1968 draft, however, still did not prove satisfactory to all of the ENDC states. Brazil, Italy, and Nigeria attempted to further amend the article with little success at the time. Italy wanted to see the inclusion of language that would ensure a reliable supply of raw materials necessary for civil nuclear programs. Specifically, Italy wanted to see text stating that nothing in the treaty will affect the 'inalienable right of all the parties to the supply of source and special fissional materials or equipment [15].'

While Italy's proposal was widely supported by non-nuclear-weapons states, the United States viewed the existing language in Article IV as covering the supply of raw material. Additionally, Washington argued that Article III, which stated that safeguards should not hamper economic or technical development of peaceful nuclear programs, or cooperation on such programs, as covering the supply issue raised by Italy. When that attempt failed, Italy called for a pledge from nuclear-weapons states to provide nuclear fuel to non-nuclear-weapon states at reduced prices. That effort also failed.

However, during the UN General Assembly debate over the treaty in between April and June 1968, several changes were made to the treaty based on the Italian and Nigerian proposals at the ENDC earlier that year. Article IV, paragraph 2, was expanded to include the right to participate in the 'fullest possible exchange of equipment, materials, and scientific and technological information.' The addition of 'equipment and materials' reflected the Nigerian and Italian amendments.

Chile also introduced an amendment during the UN debate to reflect concerns about less-developed states and access to nuclear technology [23]. The end of Paragraph 2 stated that parties to the treaty in a position to do so shall cooperate in contributing to the further development of applications of nuclear energy, particularly in non-nuclear-weapons states. Language at the end of Paragraph 2 was added based on the Chilean proposal to recognize the ‘due consideration for the needs of the developing areas of the world.’

The final text reads:

Article IV

1. *Nothing in this Treaty shall be interpreted as affecting the inalienable right of all the Parties to the Treaty to develop research, production and use of nuclear energy for peaceful purposes without discrimination and in conformity with Articles I and II of this Treaty.*
2. *All the Parties to the Treaty undertake to facilitate, and have the right to participate in, the fullest possible exchange of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy. Parties to the Treaty in a position to do so shall also co-operate in contributing alone or together with other States or international organizations to the further development of the applications of nuclear energy for peaceful purposes, especially in the territories of non-nuclear-weapon States Party to the Treaty, with due consideration for the needs of the developing areas of the world.*

While largely absent from the current debates surrounding the NPT, the question of peaceful nuclear explosions was very controversial during the drafting of the treaty. In mid-1966, the United States expressed the viewpoint that Moscow and Washington intended for the treaty’s prohibition on nuclear weapons development, acquisition, or transfer, to also include nuclear explosive devices for non-military purposes. The two states viewed the technology necessary for explosions as an inherent part of developing a nuclear weapons program, although the United States established a Division of Peaceful Nuclear Explosions at the Atomic Energy Commission in 1961. In total, the United States and the Soviet Union carried out 151 peaceful nuclear explosions, 27 by the United States and 124 by the Soviet Union [24].

The US and Soviet position was immediately rejected by Brazil and India. Italy also called for the explicit recognition of the right to conduct nuclear explosions. Brazil and India saw a benefit in retaining the right to produce nuclear explosive devices for peaceful purposes. In addition to the potential research benefit, both states saw civil applications for nuclear explosions, such as energy extraction and large-scale excavation projects. While these states were quick to point out the possible applications, only one excavation project, construction of a dam in Kazakhstan, utilized a peaceful nuclear explosion. Several were also used to stop gas well fires in the Soviet Union, but most plans for the application of peaceful nuclear explosions were abandoned by both states given the risks involved [25].

Despite the lack of evidence that peaceful nuclear explosions provided clear and unique civil applications that could not be replicated with conventional explosives, India said it rejected the attempt by nuclear-weapons states to strengthen their ‘nuclear monopoly.’ India would later conduct what it deemed a peaceful nuclear explosion in 1974, but admitted in 1997 that it was actually part of its nuclear weapons program, a point that validated arguments at the time that peaceful nuclear explosions could be used as cover for a nuclear weapons program.

In recognition of the concern expressed by states such as Brazil and India, the United States and the Soviet Union stated that the benefits of nuclear explosive devices would be made available to states without nuclear weapons that acceded to the treaty. The United States further proposed that the basis for sharing the benefits should be negotiated separately from the nonproliferation treaty, but outlined five basic principles that could guide such an arrangement [23].

The Soviet Union expressed its support for the US principles, and the identical drafts of August 1967 included language in the preamble that addressed sharing the benefits of peaceful nuclear explosions.

Only a few of the ENDC states accepted the preambulatory language as sufficient, leading Mexico to develop an amendment to address the question of peaceful nuclear explosions as a separate article that would appeal to both the nuclear-weapons states and the non-nuclear-weapons states hesitant to give up the access to peaceful nuclear explosions [20]. Mexico drew on the five principles enumerated by the United States and the Soviet Union to expand and clarify the preambulatory language. The United States and the Soviet Union largely accepted Mexico’s text and it was included as Article V in the January 1968 draft submitted to the ENDC.

Mexico’s draft amendment stated that each state party to the treaty would undertake ‘appropriate measures to ensure that’ potential peaceful applications from nuclear explosions will be made available to non-nuclear-weapons states ‘under appropriate international observation and through appropriate international procedures.’ The benefits would be provided on a non-discriminatory basis and with the lowest possible charge. Negotiations to create such a body would commence as soon as possible after the nonproliferation treaty’s entry into force. The article also allowed for non-nuclear-weapons states to obtain the benefits of peaceful nuclear explosions through bilateral agreements.

The Mexican amendment did not satisfy all of the ENDC states. Brazil introduced amendments to Article IV on two separate occasions to extend the ‘unalienable right’ to include use of nuclear explosive devices for civil purposes. Brazil viewed the Treaty of Tlatelolco as conferring the right to conduct peaceful nuclear explosions, and it wanted that same right respected by the nonproliferation treaty [20].

While Brazil was unsuccessful, in a nod to the concern voiced by the delegation to the ENDC, language in the preamble was added to note that the ‘benefits of peaceful applications of nuclear technology, including any technological by-products which may be derived by nuclear-weapons states from the development of nuclear explosive devices should be available for peaceful purposes to all parties.’

The use of ‘nuclear explosive devices’ and not ‘nuclear weapons’ was intentional, so as not to negate the intention of Articles I and II prohibition on the transfer of information on nuclear weapons, but would include ‘spin off’ or ‘by-product’ benefits of military programs. For instance, the United States developed uranium enrichment-related and plutonium reprocessing technology as part of its military program to develop nuclear weapons during the Manhattan Project. Acknowledging that non-nuclear-weapons states could access ‘by-products’ was an attempt to further assure non-nuclear-weapons states that they would be able to access technology and materials for peaceful programs. This preambulatory language differed from Article V, which did not reference the by-products of nuclear activities, only the benefits of peaceful nuclear explosions. Nigeria actually pushed for this language in the preamble to be moved to Article IV, but the proposal did not succeed. The United States countered that the peaceful and industrial benefits of military programs were mostly already available and future spin-offs would be very small. Nevertheless, US Secretary of State Dean Rusk committed to make derived by-products available to other states [23].

The final text reads:

Article V

Each Party to the Treaty undertakes to take appropriate measures to ensure that, in accordance with this Treaty, under appropriate international observation and through appropriate international procedures, potential benefits from any peaceful applications of nuclear explosions will be made available to non-nuclear-weapon States Party to the Treaty on a non-discriminatory basis and that the charge to such Parties for the explosive devices used will be as low as possible and exclude any charge for research and development. Non-nuclear-weapon States Party to the Treaty shall be able to obtain such benefits, pursuant to a special international agreement or agreements, through an appropriate international body with adequate representation of non-nuclear-weapon States. Negotiations on this subject shall commence as soon as possible after the Treaty enters into force. Non-nuclear-weapon States Party to the Treaty so desiring may also obtain such benefits pursuant to bilateral agreements.

After the NPT entered into force, the United States and the Soviet Union did conclude the Peaceful Nuclear Explosions (PNE) Treaty, designed to allow the peaceful uses of nuclear explosions without assisting or providing information to states for nuclear weapons development purposes. The bilateral treaty was signed in 1976, but did not enter into force until December 1990. The treaty limited peaceful nuclear explosions to less than 150 kilotons each, and an aggregate yield of 1500 kilotons if multiple devices are used.

The PNE Treaty was designed to limit activities by the Soviet Union and the United States, rather than make available the benefits of peaceful nuclear explosions to non-nuclear-weapon states. The experiences of the United States and the Soviet Union with peaceful nuclear explosions did demonstrate that there were few, if any, peaceful applications.

By the 1995 NPT Review Conference, the states' parties concluded that the 'potential benefits of the peaceful applications of nuclear explosions have not been demonstrated and that serious concerns have been expressed as to the environmental consequences that could result from the release of radioactivity [26].'¹ The states' parties noted that the IAEA had not received any requests for the benefits of peaceful nuclear explosions over the first 25 years of the NPT. The states' parties also noted that both the United States and the Soviet Union had ended their peaceful nuclear explosions programs and that no state had any ongoing activities in this area.

At the 2000 NPT Review Conference, the first after the Comprehensive Nuclear Test Ban Treaty (CTBT) was completed and opened for signature in 1996, the final document agreed upon by consensus noted that the provisions in Article V were to be 'interpreted in the light of' the new test ban treaty. The CTBT, which banned all nuclear test explosions, has yet to enter into force, but with the exception of North Korea, no NPT member state has tested a nuclear device since 1996, although both India and Pakistan—which possess nuclear weapons outside of the NPT—tested devices in 1998. Additionally, while failure to achieve entry into force means that the CTBT is not legally binding, the 183 states that have signed the treaty (of which 164 have ratified it) should not take steps counter to its objectives.

Due to the CTBT opening for signature in 1996 and the 2010 Review Conference Document recognizing that treaty's relationship to the NPT, the intent of Article V has been superseded and the norm against nuclear testing, for any purpose, remains strong.

2.6 Finalizing the text

The initial mandate from the UN General Assembly for the ENDC to negotiate the nonproliferation treaty was open-ended. But in December 1967, the General Assembly adopted Resolution 2346, which required the ENDC to present a full report on the treaty negotiations to the body by March 15, 1968. The resolution also stated that the UN General Assembly would reconvene after the deadline to consider the ENDC's report.

The UN deadline spurred the ENDC to wrap up its negotiations on the NPT. The draft that the United States and the Soviet Union submitted in January 1968 was near completion. It contained all of the core articles that would comprise the final text of the treaty. But with a month to go before the March 15, 1968 deadline, there were still disagreements over the wording in some of the articles. The states without nuclear weapons continued to raise the point that the disarmament provisions were not time-bound, thus risking locking in a system that perpetually advantaged the nuclear-weapons states. Romania in particular had pushed for a process to review progress on the treaty when the Soviet Union consulted the Warsaw Pact states on the text of the draft NPT in 1966 and 1967 [27]. Despite Romania's objections, six Warsaw Pact countries signed a declaration supporting the NPT text in March 1968.

In order to address remaining concerns from the non-nuclear-weapons states, the United States and the Soviet Union agreed to expand the language calling for a review of the treaty in Geneva after five years. The review process language in

Article VIII, which covered the amendment process, said the conference would be an opportunity to ‘review the operation of this Treaty with a view to assuring that the purposes of the Preamble and the provisions of the Treaty are being realized.’ The revised text contained language allowing for additional review conferences to be held at five-year increments if desirable to address implementation. Italy, in particular, had pushed for reviews every five years when the nuclear-weapons states rejected time bound disarmament commitments.

In addition, the states agreed to strengthen the preambulatory language that referenced the importance of security assurances and a comprehensive nuclear test ban treaty. The additional preambulatory language ultimately noted the intention ‘to seek to achieve the discontinuance of all test explosions of nuclear weapons for all time and to continue negotiations to this end,’ and for states to ‘refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any State.’ The security assurance language did not go far enough for all ENDC states, who continued to call for nuclear-weapons states to declare they would not use or threaten to use nuclear weapons against non-nuclear-weapons states.

Despite these amendments to the draft text, three states abstained from the ENDC’s vote to submit the treaty to the UN General Assembly. Brazil, India, and Italy’s decisions to abstain rather than vote against submitting the treaty to the UN was significant—a single vote against would have prevented submission of the document. India noted that its abstention was driven by three criticisms of the treaty: 1) the absence of specific disarmament actions and pathways, 2) the lack of security guarantees from the nuclear-weapons states, and 3) constraints on the right to the access of nuclear materials and technologies for peaceful purposes [22]. Italy abstained over the treaty’s failure to address the reliable supplies of nuclear fuel and what Rome viewed as a lack of clarity over how Euratom’s safeguards agreement with the IAEA would affect Italy [15].

After submission to the UN General Assembly, March 11, 1968, the text was considered during a special session of the General Assembly. The session allowed for states not participating in the ENDC to offer amendments and comment on the text of the treaty prior to the UN vote, although the United States did what it could to discourage amendments, out of concern that they would upset ‘solutions achieved only with the greatest difficulty [28].’

Given the acrimonious debate over the inclusion of security assurances in the text, the United States anticipated a push for amendments to include such language during the UN debate. To stave off any push to amend the treaty, the United States and the Soviet Union also agreed to pursue positive security assurances at the Security Council. Shortly after the UN vote on the NPT, the United States and the Soviet Union supported a Security Council resolution that pledged immediate action by the Council in the face of aggression with nuclear weapons by any states possessing them under the NPT. These ‘positive security assurances’ were designed to quell the concern that the states legally possessing nuclear weapons would use them for coercive purposes. The United States had considered the option of negative

security assurances but dropped the idea when Washington and Moscow could not agree on the language.

The United States initially proposed that both states make the following declaration:

The United States affirms its intention to refrain from the threat or use of nuclear weapons against any non-nuclear weapon State, Party to the Treaty on the nonproliferation of nuclear weapons, that is not engaged in an armed attack assisted by a nuclear weapon state.

While US diplomats, including Rusk, Secretary of Defense Clark Clifford and lead US negotiator Ambassador William Foster, argued that the United States be prepared to issue the declaration unilaterally if the tactic became necessary to persuade states to support the treaty, the Joint Chiefs of Staff opposed any such declaration on non-use. The Joint Chiefs argued such a statement ‘weakens the credibility of the US nuclear deterrent, reduces military flexibility, and establishes a precedent that could lead to further restrictions on US nuclear options [29].’

The United States and the Soviet Union also collaborated on an approach designed to isolate the ‘near-nuclear states,’ such as India, that did not support the treaty. Given India’s indication that it would not sign the NPT because of a perceived regional security imbalance with nuclear-armed China, the United States did not want India’s position to compete with the US argument that the NPT would provide enhanced security [30]. Hearing that Pakistan had determined not to sign the NPT unless India did, only reiterated the importance of neutralizing India’s criticism of the text.

It also became apparent to the United States that Brazil also would not support the NPT at the UN. Similar to India, Brazil abstained from the vote at the ENDC over concerns that the treaty would limit access to nuclear technology. Here, Brazil enjoyed support from its general public, the majority of whom supported the states’ pursuit of nuclear research as a source of pride and saw the treaty as an attempt by the United States and the Soviet Union to deny other states access to the benefits of nuclear programs.

In addition to refusing to sign the treaty, Brazil also indicated it intended to lobby other states to oppose a UN resolution endorsing the draft text. After meetings in April 1968 with Brazilian diplomats in Brasilia, the US perceived Brazil’s strategy as attempting to ensure that any vote in favor of the NPT succeeded with such a small majority that it would delegitimize the treaty [31].

To prevent Brazil from lobbying against the NPT, the United States tried to persuade Brazil that the treaty would not inhibit access to nuclear technology and argued that by acceding to the treaty, opportunities for cooperation could be enhanced. Brazil also objected to the lack of security assurances in the text. While Brazil later gave the United States assurance in May that Brazil would not ‘proselytize’ against the NPT, the country was unwilling to accept a ‘technological freeze for 25 years [32].’

The Soviet Union and the United States did agree to several revisions that were less substantive in nature. Slight modifications were made to the preamble and Article X, which addressed the right of withdrawal from the treaty and the duration of its restrictions.

The final text of Article X reads:

Article X

1. *Each Party shall in exercising its national sovereignty have the right to withdraw from the Treaty if it decides that extraordinary events, related to the subject matter of this Treaty, have jeopardized the supreme interests of its country. It shall give notice of such withdrawal to all other Parties to the Treaty and to the United Nations Security Council three months in advance. Such notice shall include a statement of the extraordinary events it regards as having jeopardized its supreme interests.*
2. *Twenty-five years after the entry into force of the Treaty, a conference shall be convened to decide whether the Treaty shall continue in force indefinitely, or shall be extended for an additional fixed period or periods. This decision shall be taken by a majority of the Parties to the Treaty.*

Given the high premium on access to nuclear technology for peaceful purposes, and the concern amongst non-nuclear-weapons states that signing the treaty would further reinforce the divide between the ‘haves’ and the ‘have nots,’ Washington and Moscow agreed to add additional language in Article IV, which included greater specificity on access to materials. Several states in the ENDC, such as Italy, which had pushed for specific reference to materials in Article IV, garnered support at the UN that the amendment was made. The United States also sought to assure African countries that the safeguards required under the NPT would not inhibit uranium mining [23].

On June 10, 1968, the UN First Committee voted in favor of the treaty 92–4. Shortly after, the UN General Assembly passed Resolution 2373 endorsing the treaty 95–4, with 21 states abstaining. The four states voting against the treaty were Albania, Cuba, Tanzania, and Zambia.

The abstentions included France, a nuclear-weapons state, and several middle power countries, such as India, Argentina, and Brazil.

The resolution commended the treaty text, which was included as an annex to the resolution, and expressed the hope that the ‘widest possible adherence to the Treaty by both nuclear-weapon and non-nuclear-weapon States [33].’

The resolution also requested the ENDC and nuclear-weapons states to realize Article VI, and ‘urgently pursue negotiations on the effective measures relating to the cessation of the nuclear arms race at an early date.’

On July 1, 1968, the NPT was formally opened for signature. In recognition of the positive role played by Dublin pushing for negotiations on a treaty at the First Committee and the 1961 ‘Irish Resolution,’ Ireland was the first state invited to sign the NPT, and deposited its ratification the same day. The United States, the United Kingdom, the Soviet Union and more than 50 states without nuclear



Figure 2.6. British Ambassador Patrick Dean looks on while Soviet Ambassador Anatoli Dobrynin signs the NPT. Credit: Lyndon B. Johnson Presidential Library.

weapons also signed on the opening day (see figure 2.6). The same day, Johnson and Brezhnev announced they had reached an agreement to enter into discussions in the ‘nearest future’ on the limitation and reduction of nuclear weapons and defenses against ballistic missiles.

The final text included several articles not discussed in detail in this chapter. These articles were largely procedural in nature and have less of an impact on the meaning of the text.

While the portion of Article VIII requiring a meeting of the state’s party of the NPT five years after its entry into force was previously discussed, it also describes the process for amending the treaty.

The full text of Article VIII reads:

Article VIII

1. *Any Party to the Treaty may propose amendments to this Treaty. The text of any proposed amendment shall be submitted to the Depositary Governments which shall circulate it to all Parties to the Treaty. Thereupon, if requested to do so by one-third or more of the Parties to the Treaty, the Depositary Governments shall convene a conference, to which they shall invite all the Parties to the Treaty, to consider such an amendment.*
2. *Any amendment to this Treaty must be approved by a majority of the votes of all the Parties to the Treaty, including the votes of all nuclear weapon States Party to the Treaty and all other Parties which, on the date the amendment is*

circulated, are members of the Board of Governors of the International Atomic Energy Agency. The amendment shall enter into force for each Party that deposits its instrument of ratification of the amendment upon the deposit of such instruments of ratification by a majority of all the Parties, including the instruments of ratification of all nuclear weapon States Party to the Treaty and all other Parties which, on the date the amendment is circulated, are members of the Board of Governors of the International Atomic Energy Agency. Thereafter, it shall enter into force for any other Party upon the deposit of its instrument of ratification of the amendment.

3. *Five years after the entry into force of this Treaty, a conference of Parties to the Treaty shall be held in Geneva, Switzerland, in order to review the operation of this Treaty with a view to assuring that the purposes of the Preamble and the provisions of the Treaty are being realised. At intervals of five years thereafter, a majority of the Parties to the Treaty may obtain, by submitting a proposal to this effect to the Depositary Governments, the convening of further conferences with the same objective of reviewing the operation of the Treaty.*

Article IX addresses the process of ratification and the language defining nuclear-weapons states. For the purpose of the treaty, any state that tested a nuclear explosive device or weapon prior to January 1, 1967 would be considered a nuclear-weapons state. That conferred legal status on the United States, the Soviet Union, the United Kingdom, France, and China, the five permanent members of the Security Council.

The full text of the article reads:

Article IX

1. *This Treaty shall be open to all States for signature. Any State which does not sign the Treaty before its entry into force in accordance with paragraph 3 of this Article may accede to it at any time.*
2. *This Treaty shall be subject to ratification by signatory States. Instruments of ratification and instruments of accession shall be deposited with the Governments of the United Kingdom of Great Britain and Northern Ireland, the Union of Soviet Socialist Republics and the United States of America, which are hereby designated the Depositary Governments.*
3. *This Treaty shall enter into force after its ratification by the States, the Governments of which are designated Depositaries of the Treaty, and forty other States signatory to this Treaty and the deposit of their instruments of ratification. For the purposes of this Treaty, a nuclear weapon State is one which has manufactured and exploded a nuclear weapon or other nuclear explosive device prior to 1 January 1967.*
4. *For States whose instruments of ratification or accession are deposited subsequent to the entry into force of this Treaty, it shall enter into force on the date of the deposit of their instruments of ratification or accession.*

5. *The Depositary Governments shall promptly inform all signatory and acceding States of the date of each signature, the date of deposit of each instrument of ratification or of accession, the date of the entry into force of this Treaty, and the date of receipt of any requests for convening a conference or other notices.*
6. *This Treaty shall be registered by the Depositary Governments pursuant to Article 102 of the Charter of the United Nations.*

Article XI, the last article in the treaty, notes that the treaty, as translated into the five languages of the Security Council, are equally authentic.

The text reads:

Article XI

This Treaty, the English, Russian, French, Spanish and Chinese texts of which are equally authentic, shall be deposited in the archives of the Depositary Governments. Duly certified copies of this Treaty shall be transmitted by the Depositary Governments to the Governments of the signatory and acceding States.

2.7 Achieving entry into force

The NPT required 40 ratifications, plus at least three nuclear-weapons states (defined as the states that had tested nuclear weapons prior to the culmination of negotiations of the text: the United States, the Soviet Union, the United Kingdom, China, and France) for entry into force of the treaty.

It was largely expected that the three nuclear-weapons states would be the United States, the United Kingdom, and the Soviet Union. China and France were extremely unlikely prospects for ratification. France, despite being an ENDC participant, was largely disengaged from the negotiations process and abstained on the UN General Assembly vote on the NPT. China was not an ENDC participant and argued that the treaty was discriminatory. Beijing said it would neither sign, nor adhere to, the provisions of the text. France, while stating it would not sign the treaty, declared it would ‘behave in the future in this field exactly as the States adhering to the Treaty.’ Neither state would accede to the NPT until 1992 [34].

The United Kingdom was the first nuclear-weapons state to complete the process and deposited its instrument of ratification November 27, 1968. For the United States and the Soviet Union, completing ratification proved more difficult, in part because of geopolitical events.

For the United States, completing ratification first meant obtaining the advice and consent of the US Senate. According to the Constitution, two-thirds of the Senators must approve a treaty for its ratification. Johnson submitted the text of the NPT July 9, 1968, with a message urging the Senate to vote favorably on the NPT. Johnson said that the spread of nuclear energy must not result in the further spread of nuclear weapons. He said that the NPT ‘represents another step on the journey toward world peace. I believe that its very achievement, as well as its provisions, enhances the prospects of progress toward disarmament [35].’

With the presidential and congressional elections in the fall of 1968 and the Soviet Union's interference and eventual invasion of Czechoslovakia, enthusiasm for ratification of the NPT waned. The Soviet Union's action in Czechoslovakia illustrated the fear of many states without nuclear weapons, i.e. coercion and aggression by a state possessing them.

In the United States the Soviet invasion influenced Republican presidential candidate Richard Nixon's thinking on the NPT and he opposed ratification throughout his campaign. However, shortly after US President Richard Nixon took office, he too sent a message to the Senate in February 1969 requesting that the body give its consent to ratification of the NPT. In his message to the Senate, Nixon said that ratification of the treaty is an important step in the 'endeavor to curb the spread of nuclear weapons' and would advance his administration's policy of 'negotiation rather than confrontation' with the Soviet Union [36]. The Senate voted 83–15 in favor of the treaty March 13, 1969.

The Soviet Union delayed its ratification when it became clear that the United States would not take any action before the 1968 presidential election. When Nixon was elected, Moscow was unsure of his commitment to the NPT. Additionally, tensions between the Soviet Union and West Germany were flaring up. Unlike a number of other NATO states, West Germany did not sign the NPT within the first few months of its opening for signature. The Soviet Union was concerned that Bonn might attempt to attach reservations to the NPT that might grant it exemptions from some of the treaty's terms. The Soviet Union determined not to ratify the treaty until after West Germany signed the document, which it did in November 1969. While West Germany did issue a statement upon its signature, none of the provision proved an impediment to the Soviet Union's ratification.

To get an additional 40 ratifications, the United States and the Soviet Union deliberately targeted several states, including Mexico, Ethiopia, and the United Arab Republic, to set a 'positive example' by supporting the treaty. Moscow and Washington also sought to garner support amongst states that had no nuclear programs, and thus a greater security benefit because they were not abandoning nuclear weapons development programs.

The United States and the Soviet Union both deposited their instruments of ratification on March 5, 1970. On that same day the NPT entered into force with 46 state parties. Many of the Euratom member states, while supportive of the treaty, would not complete ratification until after Euratom and the IAEA worked out a safeguards agreement in 1973.

References

- [1] Lavoy P R 2004 Predicting nuclear proliferation: A declassified documentary record
Strategic Insights 3
- [2] Popp R 2017 The long road to the NPT: from superpower collusion to global compromise
Negotiating the Nuclear Nonproliferation Treaty: Origins of the Order ed P Roland, H Livio and W Andreas (London: Routledge)

- [3] First Committee of the General Assembly 1965 *Draft Resolution on Non-Proliferation of Nuclear Weapons* submitted by the eight non-aligned members of the Eighteen-Nation Committee on Disarmament (A/C.1/L.339, 4 November 1965)
- [4] UN General Assembly Resolution 1965 *Nonproliferation of Nuclear Weapons* A/RES/2028 (November 19, 1965)
- [5] Johnson Library 1966 *National Security File* Subject File, Disarmament, Eighteen-Nation Disarmament Committee (vol II, box 13) <https://history.state.gov/historicaldocuments/frus1964-68v11/d116>
- [6] Johnson Library 1966 *National Security File* Rostow Files, Non-Proliferation (Box 11) Top Secret <https://history.state.gov/historicaldocuments/frus1964-68v11/d146>
- [7] Kohl W L 1965 Nuclear sharing in NATO and the multilateral force *Political Sci. Q.* **20** 88–109
- [8] United Nations Office for Disarmament Affairs 1963 *Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water* August 5, 1963 http://disarmament.un.org/treaties/t/test_ban
- [9] 2008 State Department cable 121338 to U.S. Embassy, Bonn *Non-Proliferation Treaty* (18 January 1967) Secret
- [10] U.S. Department of State Policy Planning Council 1966 *The Further Spread of Nuclear Weapons: Problems for the West* (14 February 1966) Secret
- [11] International Atomic Energy Agency *Basics of Safeguards* <https://www.iaea.org/topics/basics-of-iaea-safeguards>, (last accessed Jan. 27, 2018)
- [12] Pollack H 1967 Memorandum from Herman Pollack, Deputy Director, Office of International Scientific Affairs, to Secretary of State Dean Rusk *IAEA Preparations for NPT Safeguards Responsibilities* (12 May, 1967)
- [13] O'Driscoll M 2002 The origins and early history of Euratom, 1955-1968 *The European Parliament and the Euratom Treaty: Past, Present and Future* (Luxembourg: European Parliament)
- [14] U.S. Department of State 1968 Does DeGaulle Want to Torpedo the NPT? *Bureau of Intelligence and Research, Intelligence Note-88* (1 February 1968) Secret/No Foreign Dissemination/Controlled Dissemination
- [15] Nuti L 2017 A turning point in postwar foreign policy: Italy and the NPT Negotiations *Negotiating the Nuclear Nonproliferation Treaty: Origins of the Order* ed P Roland, H Livio and W Andreas (London: Routledge)
- [16] Bunn G 2006 *Brief History of NPT Safeguards Article* (February 2006)
- [17] 2008 U.S. Mission NATO cable 1393 to State Department *NAC January 18—Draft NPT* (18 January 1968) Secret
- [18] 2008 U.S. Arms Control and Disarmament Agency *Non-Proliferation Treaty* Memorandum of Conversation (18 January, 1968) Confidential
- [19] 2008 U.S. Arms Control and Disarmament Agency *Soviet Views on NPT* Memorandum of Conversation (3 January 1968) Secret
- [20] Hunt J 2017 Mexican nuclear diplomacy, the Latin American nuclear-weapon-free zone, and the NPT grand bargain, 1962-1968 *Negotiating the Nuclear Nonproliferation Treaty: Origins of the Order* ed P Roland, H Livio and W Andreas (London: Routledge)
- [21] UN Office of Disarmament Affairs *Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean* (February 14, 1967) <http://disarmament.un.org/treaties/t/tlatelolco>

- [22] Vindo Kumar A 2017 Between idealism, activism, and the bomb: why did India reject the NPT? *Negotiating the Nuclear Nonproliferation Treaty: Origins of the Order* ed P Roland, H Livio and W Andreas (London: Routledge)
- [23] Shaker M 1980 *The Nuclear Nonproliferation Treaty: Origin and Implementation* (New York: Oceana)
- [24] World Nuclear Association *Applications of Peaceful Nuclear Explosions* (updated July 2010) <http://www.world-nuclear.org/information-library/non-power-nuclear-applications/industry/peaceful-nuclear-explosions.aspx> (last accessed Feb. 1, 2018)
- [25] World Nuclear Association *USSR: Nuclear Explosions and the National Economy* (updated July 2010) <http://www.world-nuclear.org/information-library/non-power-nuclear-applications/industry/peaceful-nuclear-explosions.aspx> (last accessed Feb. 1, 2018)
- [26] Henry S 2010 *Reviewing the Nonproliferation Treaty* (Carlisle, PA: Strategic Studies Institute)
- [27] Crump-Gabreels L 2017 Nonproliferation under pressure: the nuclear debate within the Warsaw Pact, 1965-1968 *Negotiating the Nuclear Nonproliferation Treaty: Origins of the Order* ed P Roland, H Livio and W Andreas (London: Routledge)
- [28] 2008 U.S. Department of State Cable 142418 to U.S. Mission United Nations *NPT and Resumed GA [General Assembly]* (5 April 1968) Secret
- [29] Read B 1968 Benjamin Read, Executive Secretary, U.S. Department of State, to the Secretary *Your Luncheon Meeting with the President Today* (23 April 1968) with State Department and Joint Chiefs of Staff memoranda attached (Top Secret)
- [30] U.S. Department of State Cable 142418 to U.S. Mission United Nations *NPT and Resumed GA [General Assembly]* (5 April 1968) Secret
- [31] 2008 U.S. State Department, Bureau of Intelligence and Research Intelligence, Note-290 *Brazilian Opposition to NPT Draft Likely to Continue* (19 April 1968) Secret/No Foreign Dissemination
- [32] 2008 U.S. Department of State, Memorandum of Conversation *Brazil's Attitude on NPT* (6 May 1968) Confidential
- [33] UN General Assembly Resolution 1968 *Treaty on the Nonproliferation of Nuclear Weapons* A/RES/2373 (June 12, 1968)
- [34] Arms Control Association Factsheet *Timeline of the Nuclear Nonproliferation Treaty* (updated 2018) <https://www.armscontrol.org/factsheets/Timeline-of-the-Treaty-on-the-Non-Proliferation-of-Nuclear-Weapons-NPT>
- [35] Johnson L B 1968 Special message to the Senate urging consent to the ratification of the nuclear nonproliferation treaty *The American Presidency Project* (July 9, 1968) <http://www.presidency.ucsb.edu/ws/?pid=29002>
- [36] Nixon R 1970 Message to the Congress transmitting annual report of the United States arms control and disarmament agency *The American Presidency Project* (February 26, 1970) <http://www.presidency.ucsb.edu/ws/?pid=2886>

The Nuclear Nonproliferation Treaty

Kelsey Davenport

Chapter 3

Major NPT milestones

3.1 Early efforts to end the arms race

When Johnson and Brezhnev signed the NPT July 1, 1968, the two leaders announced an agreement to enter into negotiations to limit the deployment of nuclear weapons and defense against ballistic missiles. The announcement was widely viewed as a positive step in support of Article VI of the NPT, which called for an early end to the arms race, but the events that drove the decision to negotiate largely predated the conclusion of the NPT. The decision to pursue talks was spurred in large part by the Soviet Union's decision to begin building an anti-ballistic missile defense system around Moscow. US Secretary of Defense Robert McNamara said the United States and the Soviet Union were choosing an 'insane road to follow' by reacting to one another's escalation [1]. He argued that limiting offensive and defensive nuclear capabilities would stabilize the current environment. McNamara succeeded in convincing Johnson, who met with Soviet Premier Alexei Kosygin in 1967 and called for talks on strategic arms limitations and efforts to control the anti-ballistic missile escalation. The Johnson–Kosygin meeting in New Jersey in 1967 helped pave the way for the July 1968 announcement that negotiations would begin.

In November 1969, the two states began the Strategic Arms Limitation Talks (SALT). During the interim period between announcing the talks and the commencement of negotiations, the United States elected Richard Nixon as president, but Nixon supported the principle of the negotiations as part of the détente strategy his National Security Advisor Henry Kissinger advanced.

By May 1972, the SALT talks had produced two agreements. The first, known as the Anti-Ballistic Missile Treaty, limited strategic missile defenses initially to 200 interceptors, a number which was set to drop to 100. (The United States later withdrew from the treaty in 2002.) The SALT talks also limited submarine launched ballistic missiles (SLBMs) and ICBMs. The United States was capped at 1054 ICBMs and 656 SLBM tubes in its submarines. The Soviet Union was limited to

1607 ICBMs and 740 SLBM tubes. Additionally, as part of the agreement, both Washington and Moscow agreed not to build any new ICBM silos [2].

The agreement did not include bombers in the cap on delivery systems or set limits for the actual number of warheads that each state possessed or deployed. As a result, both the United States and the Soviet Union could still enlarge their nuclear arsenals by deploying additional warheads on each missile. Despite this drawback, the limitations on ICBMs and SLBMs were a critical step in halting the expansion of nuclear delivery systems and a first for capping ballistic missiles during the Cold War.

The success of the SALT talks led to a second round of negotiations that became known as SALT II.

SALT II negotiations from November 1972–June 1979 spanned the presidencies of Nixon, Gerald Ford, and Jimmy Carter, underscoring the bipartisan support for nuclear arms reductions during the Cold War. One of the primary goals of SALT II was first to limit, rather than reduce, the number of warheads placed on each missile. Under SALT I, there was no limit on MIRVs, or multiple independently targeted reentry vehicles, for each missile. The lack of limits on MIRVs allowed both the United States and the Soviet Union to load up ICBMs and SLBMs with multiple nuclear warheads, making the number of deployed warheads much higher than the deployed systems.

Ford and Brezhnev reached a breakthrough at a meeting in Vladivostock, November 1974. During the summit, the two sides agreed to a limit of 2400 strategic nuclear delivery vehicles and 1320 MIRVs. Unlike SALT I, bombers were counted as delivery systems in SALT II. Ford and Brezhnev also agreed to ban additional, new land-based ICBMs. The 2400 was later dropped to 2250 over the course of the negotiations.

Despite this breakthrough, it took another five years to work out the details of the text. The Soviet Union contested the inclusion of one of its bombers, the Backfire, as a strategic delivery system. The United States argued that it must be counted because it had a range capable of reaching the United States. The Soviet Union took issue with US deployment of air-launched cruise missiles, and unsuccessfully sought to limit the number of those missiles under the treaty.

The question of verification, particularly for MIRV systems, also complicated the talks. Finally, however, the two sides brokered a compromise and agreed to use National Technical Means, including satellite imagery, photo reconnaissance, and electric signal telemetry, to verify the treaty. There were no inspections included.

At the time the negotiations were completed, the United States was already below the SALT II limits. The Soviet Union, however, would have had to eliminate about 270 delivery systems in order to meet the cap agreed upon in SALT II.

Carter and Brezhnev signed SALT II June 17, 1979 (see figure 3.1), but the treaty never entered into force. Around the time the negotiations were finalized, the Soviet Union invaded Afghanistan in December 1979. Members of Congress were also skeptical of the Soviet Union's increasingly interventionist foreign policy and domestic repression of dissidents and voiced concerns to Carter that ratification of the treaty would be advantageous to the United States [3]. As a result, Carter chose



Figure 3.1. US President Jimmy Carter and Soviet General Secretary Leonid Brezhnev sign the SALTII Treaty in 1979. Credit: Bill Fitz-Patrick

not to ask the US Senate for its advice and consent to complete the ratification process, as it was unlikely that the treaty would garner the requisite 67 votes necessary for approval.

Despite Carter's decision, both sides did commit to unilaterally abide by the terms of SALT II, until May 1986, when US President Ronald Reagan said that US decisions about the future of the nuclear arsenal would be based on the Soviet threat, not the SALT II agreement.

Although Reagan was dismissive of the SALT II limits, he supported the conclusion of the negotiations with the Soviet Union on a treaty that verifiably eliminated ground-launched ballistic missiles and cruise missiles with ranges between 500 and 5500 km.

This agreement, known as the Intermediate-Range Nuclear Forces Treaty (INF), was signed on December 8, 1987. The United States called for negotiations after the Soviet Union began to deploy the SS-20, an intermediate-range ballistic missile that significantly improved Moscow's nuclear capabilities in the European theater in the 1970s [3]. The United States initially attempted to pursue both negotiations to limit the SS-20 and pursue a new US missile to offset the advantage that the Soviet Union gained by its new system. Although the US developed a new ground-launched cruise missile and the Pershing II missile to counter the SS-20, negotiations failed to gain traction until March 1985, when Mikhail Gorbachev became the General Secretary of the Soviet Union. At that time, Gorbachev introduced the idea of reciprocal limits between the United States and the Soviet Union on missiles with intermediate ranges



Figure 3.2. Soviet inspectors examine dismantled Pershing II missiles, as required by the INF Treaty. Credit: MSGT Jose Lopez Jr, Department of Defense.

in Europe. The scope of the negotiations then expanded to include all intermediate missile systems fielded by both states around the world.

The talks ultimately concluded in December 1987, with an agreement that required the United States to eliminate its Pershing II, Pershing IA, and Pershing IB ballistic missiles and BGM-109G cruise missiles. The Soviet Union had to destroy its SS-20, SS-4, SS-5, SS-12, and SS-23 ballistic missiles and SSC-X-4 cruise missiles. Additionally, the United States and the Soviet Union had to destroy training missiles, rocket stages, launch canisters, and launchers for all of the missiles that fell under the INF Treaty prohibitions.

Another important element of INF Treaty was that it included the first agreed-upon verification measures that allowed the United States and the Soviet Union to conduct on-site inspections to verify that elimination of the missile systems took place (see figure 3.2). Monitoring of facilities that had produced missiles that fell into the INF Treaty prohibited ranges were also subject to short notice inspections by the other state. This proved to be a critical confidence-building measure for ensuring that the treaty was fully implemented. It also laid the groundwork for future reduction treaties.

Concluding the treaty marked the first time Moscow and Washington had agreed to reduce and eliminate an entire category of nuclear weapons, and utilize extensive on-site inspections for verification; a considerable boon to the NPT. As a result of the INF Treaty, the United States and the Soviet Union destroyed a total of 2692 short-, medium-, and intermediate-range missiles by the treaty's implementation deadline of June 1, 1991.

3.2 Dealing with nuclear-armed post-Soviet states

The next round of strategic arms control talks between Washington and Moscow were interrupted and complicated by the collapse of the Soviet Union, an event which took the United States by surprise and nearly derailed additional nuclear reductions.

On December 8, 1991, when Soviet leaders met in Belarus to declare the end of the Soviet Union and the establishment of 12 new republics, four of the newly independent states, Russia, Belarus, Ukraine, and Kazakhstan, inherited nuclear weapons stationed on their territories by the former Soviet Union.

The dispersal of Soviet nuclear weapons across four states posed a challenge not only to the leaders of these countries, but also the NPT. Failure to persuade these states to give up nuclear weapons would have risked creating a proliferation cascade, possibly motivating other states to withdraw from the treaty to pursue their own nuclear weapons programs over the changing balance of power and security dynamics.

The new nuclear-weapons possessing states recognized the critical need to manage the dispersed nuclear arsenal, and, just weeks after independence, agreed on December 21 that to preserve strategic stability there would be singular control over the dispersed weapons. Later, on December 25, Gorbachev transferred the nuclear launch codes to Boris Yeltsin, the new president of Russia. Any decision on use, however, would require consultations with the heads of Belarus, Kazakhstan and Ukraine. The states also agreed to try to dismantle the weapons outside of Russia by the end of 1994.

Despite reaching this agreement, ICBMs in Ukraine began to cause a rift between Kiev and Moscow over questions concerning control and launch. In April 1992, the Ukraine Defense Ministry sought administrative control over the systems [4]. While an agreement was reached allowing Ukraine to take over responsibilities for maintenance and operations, Russia would retain command over launch, and both capitals would need to sign-off on any use of the ICBMs in Ukrainian territory.

US officials had mixed feelings about the future of nuclear weapons in the former-Soviet states. Some saw value in Ukraine retaining nuclear weapons to deter Russia, but US Secretary of State James Baker prevailed in convincing the Bush administration that nuclear rivalries between the former Soviet states could pose a threat to strategic stability. He pressed hard for the removal of nuclear weapons from the newly independent states of Belarus, Kazakhstan, and Ukraine [4].

Baker also wanted to ensure that the new nuclear states did not disrupt the 1991 START Treaty between the United States and the Soviet Union (see figure 3.3). After more than a decade of intense negotiations, the United States and the Soviet Union agreed in July 1991 to limit themselves to 1600 strategic delivery systems and 6000 strategic nuclear warheads, but the treaty had not entered into force prior to the collapse of the Soviet Union (see figure 3.4). The treaty also included extensive verification mechanisms that allowed each side to confirm the other was abiding by the limits of the agreement. For the United States, ensuring that the treaty was realized, even though Soviet nuclear weapons were now spread amongst four states, was a key priority.

The Nuclear Nonproliferation Treaty

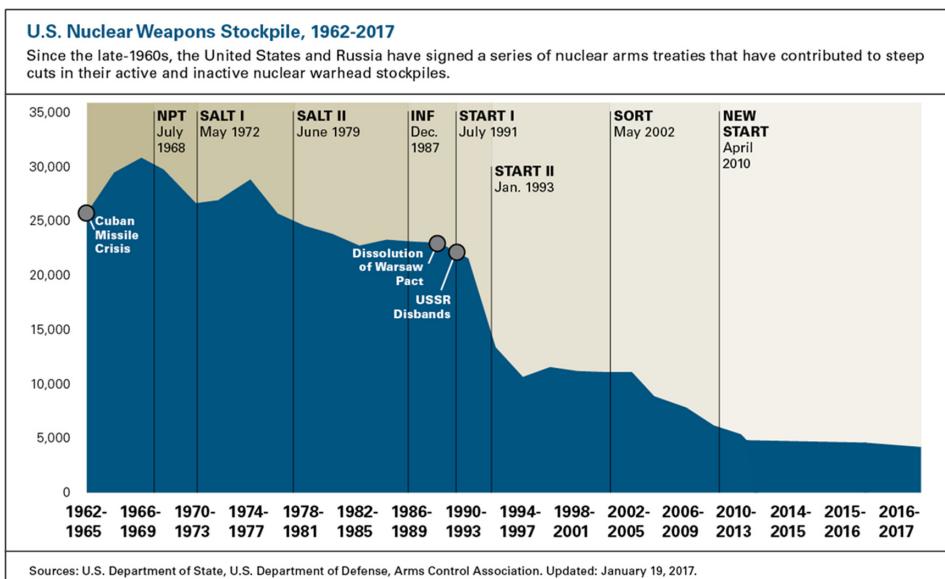


Figure 3.3. The US nuclear weapons stockpile decreased dramatically as a result of the negotiated reductions, first with the Soviet Union and later with Russia. Credit: Arms Control Association.



Figure 3.4. US President George H W Bush and Russian President Mikhail Gorbachev sign the START Treaty July 31, 1991. Credit: Susan Biddle, US Department of State.

The United States initially proposed two options to Russia for addressing the question of how dissolution of the Soviet Union would impact the START treaty. One option was for the United States to negotiate a protocol with the Russians, after which Moscow would negotiate with Belarus, Ukraine, and Kazakhstan to multi-lateralize START obligations and limitations. This could have allowed weapons systems to remain in the newly independent states. Under the second option, a new protocol to the START treaty would be negotiated amongst all five states.

Russia initially tried to pursue the first option, but faced significant opposition from its former Soviet counterparts. Ukraine, in particular, wanted to negotiate directly with the United States as a full partner in the treaty.

The United States began to pursue the second strategy, under which Ukraine, Kazakhstan, and Belarus would agree to take steps to accede to the NPT as non-nuclear-weapons states as quickly as possible. The three states would also be party to the START Treaty, but under the condition that each would take steps to eliminate ‘all nuclear weapons’ on their respective territories within seven years. The details of this arrangement were hammered out in the 1992 Lisbon Protocol to the START Treaty.

As part of the Lisbon protocol, Belarus, Kazakhstan and Ukraine agreed to give up the nuclear weapons in their territories within seven years, and join the NPT as non-nuclear-weapons states as soon as possible. Completing the protocol also paved the way to the Senate providing its advice and consent to START, a necessary component for US ratification of a treaty, which took place in October 1992. Russia, however, refused to exchange instruments of ratification until after Belarus, Ukraine, and Kazakhstan completed accession to the NPT.

For Kazakhstan, adhering to the Lisbon Protocol and START was relatively straightforward. Kazakhstan ratified START in July 1992, acceded to the NPT in May 1994 and returned all of the nuclear weapons, including 1410 strategic warheads stored on its territory by the end of April 1995.

For the other two states, however, complications emerged after the negotiation of the Lisbon Protocol. Belarusian President Alexander Lukashenko, after ratifying the Lisbon Protocol in February 1993 and joining the NPT in July 1993, twice threatened to retain nuclear weapons if NATO placed nuclear warheads in Poland. A constitutional crisis in 1996, however, motivated Lukashenko to complete the transfer [5]. By November 1996, the 100 strategic systems and 725 tactical warheads were returned to Russia.

The disarmament process in Ukraine also proved difficult after the Lisbon Protocol was reached. Having inherited about 1900 strategic warheads and about 2275 tactical warheads, Ukraine possessed the third-largest nuclear arsenal after Russia and the United States. Ukraine initially attached a reservation to its ratification START, which included conditions unacceptable to Russia and the United States, namely that Ukraine would only partially dismantle its stockpile of nuclear warheads. The Ukraine parliament said the country would retain about half the nuclear weapons, citing an interest in using the fissile material for peaceful purposes [5]. Ukraine also demanded security assurances from Russia and the United States not to use nuclear weapons against the country. The three states

negotiated a separate statement in January 1994 which committed Ukraine to return all nuclear weapons within seven years, but allowed Ukraine to observe the dismantlement of some systems. In return, Russia would return highly-enriched uranium from the nuclear weapons to Ukraine in the form of low-enriched uranium for nuclear fuel and provide security guarantees to Ukraine. With the conclusion of the statement, Ukraine acceded to the NPT.

Ukraine completed the transfer of 1900 strategic warheads and about 2275 tactical warheads to Russia in June 1996.

Negotiation of the Lisbon Protocol was a milestone moment for the NPT. Not only did it ensure that reductions required under START would continue despite the Soviet Union dissolving, it also helped reinforce the universality of the treaty and prevented proliferation. Rather than seeing the number of nuclear-weapons states nearly double, the Lisbon Protocol reinforced commitment to the goal of reducing nuclear weapons and preventing new nuclear-armed states.

Reaching the Lisbon Protocol and implementing the START treaty also paved the way for negotiations on START II to begin. START II, signed July 3, 1993, by US President George H W Bush and Russian President Boris Yeltsin, required the United States and Russia to reduce their total deployed strategic warheads in two phases. The first phase required each side to reduce deployed warheads to 3800–4250. The second phase required reductions to 3000–3500 warheads. The treaty also required the United States and Russia to only deploy one warhead on ICBMs. This eliminated multiple independently targeted re-entry vehicles, or ‘MIRVed’ ICBMs. The treaty also limited submarine launched ballistic missiles to 1700–1750.

Despite being signed in 1993, it took nearly seven years for the treaty to enter into force. While the US Senate provided advice and consent in January 1996, the Russian Duma did not approve the treaty until April 2000. Given the late date of ratification, the limitations had to be completed between January 2003 and December 2007.

3.3 Nonproliferation successes and failures

While Article VI enjoyed several significant successes after entry into force of the NPT, the nonproliferation record was more mixed. While several states gave up nuclear weapons programs upon deciding to join the NPT, others illicitly pursued weaponization activities in violation of treaty commitments.

Without question there is clear evidence that some states grew to see greater benefit in joining the NPT than pursuing nuclear weapons programs. For example, Sweden pursued an organized effort to develop nuclear weapons beginning in 1945, but abandoned its program in 1966, citing the possession of nuclear weapons as unnecessary for security purposes. Sweden ratified the NPT in 1968, and by 1972 its facilities for separating plutonium were shut down.

Brazil pursued a secret nuclear weapons program, aided by technology from West Germany, that was not terminated until 1990, when President Fernando Collor de Mello formally exposed the military program and shut down the sites where nuclear activities took place. Brazil later acceded to the NPT in 1998. In response to Brazil’s

nuclear weapons program, Argentina began its own uranium enrichment program in the 1960s, and did some initial research on nuclear weapons development. The Argentinian program ended in 1983, when the country returned to civilian rule. Later in 1991, Brazil and Argentina announced an end to nuclear rivalry and began negotiating a bilateral safeguards agreement to build confidence that both programs were exclusively peaceful. Argentina acceded to the NPT in 1995. Despite embarking on these programs, both states saw greater benefit in abandoning them and joining the NPT.

Other states joined the NPT, but conducted illicit nuclear weapons research in contravention of their commitments not to pursue nuclear weapons. Iraq ratified the NPT in 1969, but beginning in the 1970s, under the leadership of then vice-president Saddam Hussein, the state pursued an aggressive nuclear weapons program. While Iraq's illicit nuclear activities were partially exposed in 1981, after Israel bombed the partially completed Osirak reactor in Iraq, the full extent of the program was not discovered until after the First Gulf War. It became clear that some of the illicit activities were conducted at safeguarded facilities [7]. Iraq's success in deceiving the IAEA drove the adoption of more intrusive safeguards mechanisms in 1997 (discussed in more detail in the next section).

Libya also violated the NPT by pursuing a covert nuclear weapons program. Libya's nuclear weapons program preceded its accession to the NPT in 1975 and the country continued its illicit nuclear activities until 2003, when Muammar Qadhafi agreed to give up its nuclear materials and eliminate the program. The United States and the United Kingdom assisted in dismantling Libya's nuclear facilities under IAEA oversight.

Iran also illicitly pursued nuclear weapons, despite having ratified the NPT in 1970. Iran pursued an ambitious nuclear energy program under the Shah, and in the late 1980s, under the Ayatollah Khomeini, began acquiring nuclear technology and materials to produce fissile material as part of an organized effort to pursue nuclear weapons. While the United States and others suspected that Tehran was pursuing an illicit nuclear weapons program using civilian facilities, an Iranian dissident group exposed several nuclear facilities in 2002. US intelligence assessed in 2007 that Iran had achieved the necessary capabilities to produce nuclear weapons, but never made the final decision to build an atomic weapon. Iran, however, blocked IAEA efforts to investigate illicit activities, eventually leading the IAEA to refer Iran to the Security Council, which sanctioned Tehran for failing to comply with its safeguards obligations.

The controversy over Iran's nuclear program did not end until a group of six states (China, France, Germany, Russia, the United Kingdom, and the United States), negotiated an agreement with Iran known as the Joint Comprehensive Plan of Action in July 2015.

As part of the July 2015 agreement, the IAEA was able to complete its investigations into Iran's activities connected to nuclear weapons development. In December 2015, the IAEA concluded in a report that Tehran had embarked on an organized nuclear weapons program up until 2003. From 2003–2009, some nuclear-weapons-related activities were conducted, but not as part of an organized effort.

The deal limits Iran's nuclear activities for 10–25 years and requires more intrusive monitoring and verification permanently.

The future of the nuclear deal with Iran remains in doubt, however, as the United States decided to withdraw from the agreement in May 2018 and reimpose sanctions on Iran. In announcing this decision the United States did not assert that Iran was violating the deal, but stated that the agreement hampered US efforts to address other Iranian activities of concern. Washington's partners in the deal, as well as the IAEA, asserted that Tehran was complying with the limitations as required by the agreement.

While these states attempted to pursue nuclear weapons, South Africa remains the only state to have developed a nuclear arsenal, dismantled it, and joined the NPT as a non-nuclear-weapons state. South Africa's decision to dismantle its warheads and accede to the NPT significantly strengthened the treaty.

Unlike Belarus, Kazakhstan, and Ukraine, South Africa's nuclear weapons were not inherited. South Africa chose not to sign the NPT in 1968 and instead began a covert domestic nuclear weapons program in the mid-1970s in response to the Soviet expansion in southern Africa. Former South African president F W de Klerk said that because of the Soviet Union's funding of Cuban troops to the region, particularly Angola, at a time when the apartheid regime was coming under mounting criticism from the international community, the state decided to pursue nuclear weapons to use in a crisis. De Klerk said political leaders reasoned that disclosing the presence of nuclear weapons could shift the political support of the United States and Western Europe in favor of South Africa [6].

Prior to the decision to pursue nuclear weapons, South Africa was building up its nuclear infrastructure under the Atoms for Peace program. South Africa purchased a nuclear reactor from the United States in 1957, along with highly-enriched uranium to fuel it. South Africa later built its own reactor, fueled by US supplied low-enriched uranium, moderated with heavy water.

South Africa also developed the infrastructure for uranium enrichment, and in 1974 began building a plant to house centrifuge cascades. After initially developing centrifuges in secret, South Africa opened up about its uranium enrichment program, with Prime Minister B J Vorster calling attention to it in a July 1970 speech. Vorster, however, couched South Africa's plans as part of an economic strategy rather than a weapons program, noting that the state intended to pursue uranium enrichment as part of a plan of 'mineral beneficiation' to take advantage of the natural uranium reserves. Vorster said South Africa was seriously considering joining the NPT, although documents later made clear that this was rhetoric to appease the international community, as South Africa did not want to be subject to IAEA safeguards while pursuing its covert nuclear weapons program, which began in earnest in 1973.

Despite South Africa's attempts to pursue the program in secrecy, the Soviet Union and the United States were both aware of the nuclear weapons program. A 1983 US intelligence report noted that South Africa was looking into three different types of nuclear weapons designs and had conducted research on a gun-type device, the easiest type of nuclear weapon to manufacture.



Figure 3.5. After South Africa joined the NPT, shafts at the site the state prepared for nuclear testing were filled with concrete to render them harmless. Credit: IAEA.

By mid-1977, South Africa had produced a gun-type explosive device, but had yet to pair or test the device with highly-enriched uranium. Soviet intelligence discovered a test site South Africa was building in 1977 and combined pressure prevented the state from conducting a nuclear test there (see figure 3.5). The subsequent UN decision to impose an arms embargo on South Africa in 1977 and the US Nuclear Nonproliferation Act of 1978, which imposed more stringent controls on access to nuclear technology, underscored the urgency for pursuing nuclear weapons, which South Africa's government began to view as an insurance policy in light of the growing pressure by the international community to end apartheid.

Although the United States and the Soviet Union had discovered its nuclear program, South Africa refrained from revealing the extent of its nuclear weapons activities. South African diplomats did, however, begin to raise hypothetical questions with US diplomats, to probe what South Africa might get in return for giving up its nuclear weapons. South Africa also sent a letter to the IAEA in 1988, indicating a willingness to join the NPT if the state could sell uranium.

By 1989 South Africa's political situation was changing. South Africa was no longer fighting Cuban troops in Angola and the Soviet Union's waning influence in the region posed less of a threat to the state. The election of de Klerk, who was viewed as having a more moderate view on apartheid, in 1989 looked to end the growing international hostility toward South Africa stemming from the state's apartheid regime. De Klerk argued that the government's nuclear weapons were no longer necessary for security purposes and had no strategic value. He also noted that as South Africa transitioned to majority rule and integration back into the international community, the existence of nuclear weapons could be a liability. By 1991, South Africa's nuclear weapons program was dismantled and in July of that year the state had joined the NPT as a non-nuclear-weapons state and allowed IAEA inspectors into its nuclear weapons facilities. In 1993, South Africa publicly

admitted it had constructed six nuclear weapons and partially completed the seventh, when the state abandoned its program in 1990.

While the aforementioned cases highlight the importance of the nonproliferation provisions in the NPT as creating the legal basis for pressuring states to give up illicit nuclear weapons programs, the treaty did not succeed in heading off every state from developing nuclear arsenals. India, Pakistan and Israel remain key exceptions to the universality of the NPT and are unlikely to give up nuclear weapons in the foreseeable future.

3.4 Strengthening safeguards: lessons learned from Iraq and North Korea

The decision by some states, particularly Iraq and North Korea, to attempt illicit nuclear weapons programs while party to the NPT, demonstrated that the safeguards requirements in Article III of the NPT were not strong enough to deter states from pursuing covert nuclear activities.

The cases of Iraq and North Korea in the early 1990s raised serious concerns about the efficacy of the IAEA safeguards required under the NPT. Both states, despite being NPT members, secretly pursued nuclear weapons programs, the extent of which were unknown to inspectors, raising the question of whether or not the NPT sufficiently closed all ‘loopholes’ to nuclear weapons, as underscored by one of the principles for the treaty outlined in UN General Assembly Resolution 2028.

After the 1991 Persian Gulf War, the full extent of Saddam Hussein’s attempt to illicitly pursue nuclear weapons became clear, as did the extent to which he managed to deceive inspectors implementing Iraq’s safeguards agreement. In the lead up to the war, there was evidence that Iraq was engaged in illegal activities relevant to developing a nuclear weapon, but inspectors soon realized after the war that the program was more advanced than initial intelligence suggested.

Former UN chief weapons inspector David Kay later testified to the Senate Foreign Relations Committee that Iraq could have produced enough fissile material for a nuclear warhead in 12–18 months [7]. Prior to Operation Desert Storm, the estimates suggested that Iraq was 4–5 years away from a nuclear weapon.

Iraq built a number of nuclear facilities throughout the country that it failed to report to the IAEA as required by its safeguards agreement. Although Hussein’s program never managed to produce weapons-grade enrichment, covert facilities experimented with centrifuges and chemical enrichment, as well as plutonium separation prior to the 1991 conflict. Iraq even conducted undeclared nuclear activities at declared sites where IAEA inspectors had access, including at a Russian-supplied research reactor, which Baghdad was planning to use as part of a ‘crash program’ to build a bomb by diverting highly-enriched uranium from the site for weapons purposes (see figure 3.6).

The IAEA inspections had not uncovered the clandestine activities, prompting Hans Blix, the IAEA Director General, to call for a more robust safeguards system in 1991 during the UN General Assembly [8].



Figure 3.6. IAEA inspectors examine the remains of a Russian-built reactor in Iraq after the 1991 Gulf War.
Credit: IAEA.

The call for stronger safeguards was further compounded by the case of North Korea. North Korea joined the NPT in 1985, but put off concluding its comprehensive safeguards agreement with the IAEA until 1992, despite conditions in the treaty requiring states to conclude negotiations on a safeguards agreement within 18 months of acceding to the NPT (see figure 3.7). Pyongyang used the seven years that lapsed between joining the NPT and concluding its safeguards agreement to pursue a nuclear-weapons program in violation of the NPT. Then, when North Korea did negotiate its safeguards agreement, the country lied to the IAEA on the declaration of its nuclear facilities and activities.

While IAEA inspectors were quick to note discrepancies between North Korea's nuclear activities and its declaration and special inspections at several nuclear sites in 1993, North Korea continued to deceive the agency and the broader international community over its nuclear program. Even after the United States and North Korea reached an agreement in 1994, known as the Agreed Framework, under which North Korea agreed to halt plutonium production and separation activities, Pyongyang continued to pursue an illicit uranium enrichment program in violation of its safeguards agreement. The program was not publicly exposed until 2002.

Although efforts to strengthen safeguards were well underway at that point, with the completion of the IAEA Model Additional Protocol in 1997, North Korea's ability to hide its uranium enrichment program from inspectors further underscored the critical need for the expansion of safeguards and the importance of seeking to universalize the Additional Protocol.



Figure 3.7. North Korea concludes its safeguards agreement with the IAEA in January 1992, seven years after joining the NPT. Credit: IAEA.

The Model Additional Protocol, completed in 1997, included four key enhancements to the safeguards agreements negotiated with the IAEA [9]. First, the additional protocol expanded the amount and types of information that each state must make available to the IAEA. This includes an expanded declaration that covers nuclear fuel cycle related research and development activities, even if these activities do not utilize nuclear materials, and information about production from uranium mines and thorium plants. Trade in certain dual use items must also be reported to the IAEA.

Second, the additional protocol grants expanded access to inspectors. In addition to allowing inspectors to visit sites included in the more comprehensive declaration, inspectors can also access declared nuclear facilities on short notice and it increases situations where environmental sampling can be used. The third element includes streamlining visa processing for inspectors and the fourth increases the situations under which inspectors can use environmental sampling.

Despite cases like Iraq and North Korea demonstrating the need for additional safeguards, the additional protocol has its critics, which has prevented the additional protocol from becoming mandatory.

Some of the resistance to making the additional protocol mandatory stems from the slow pace of disarmament. Brazil, in particular, has also been vocal about the push for additional nonproliferation measures, like the additional protocol, when progress by the nuclear-weapons states on disarmament has been so slow [10]. Brazil also argues that its bilateral arrangement with Argentina, the ABACC, which both

state is sufficiently intrusive to deem the additional protocol unnecessary as a supplement to the required IAEA safeguards.

Within the NPT, concluding additional protocols is encouraged but is not required. For instance, the action plan agreed to at the 2010 NPT Review Conference encouraged states to conclude and bring into force additional protocols and the IAEA to assist states in concluding additional protocols. As of 2018, 132 states have an additional protocol in place. Despite the lack of universality, widespread use of the additional protocol has significant enhanced confidence in the effectiveness of safeguards.

3.5 The 1995 indefinite extension debate

As originally drafted, the duration of the NPT was 25 years with an option for extension. Article X, paragraph 2, states that 25 years after entry into force of the NPT, a conference must be held to determine if the Treaty should continue to exist indefinitely or be extended for defined periods.

The initial 25 year duration was included in part as a check for the non-nuclear-weapons states to assess disarmament progress and, if necessary, re-evaluate the decision to give up nuclear weapons.

Article X also expressly stated that an extension required the support of a majority of states' parties, not consensus. The explicit mention of majority support was significant, as the NPT member states operated under a rule of consensus for producing a final document at the five-year review conferences.

In the lead up to the 1995 Review and Extension Conference, a group of states referred to as the 'Western Bloc,' which included the United States, its NATO allies, and other states under the US nuclear umbrella, such as Australia, lobbied intensively to garner support amongst NPT states for an indefinite extension of the NPT [11]. Recent revelations over the illicit nuclear activities in Iraq and North Korea, as well as Pyongyang's threat to withdraw from the NPT in 1993, buttressed the case of the Western Bloc that solidifying the NPT's future was a necessary step to protect against the very real threat of nuclear proliferation.

Crucial steps on disarmament taken by the United States and Russia after the Soviet Union fell further added to the case made by the Western Bloc, namely that the nuclear-weapons states were making progress toward disarmament. By the time the Review Conference was held, the United States and Russia had completed negotiations on the START treaty, which significantly reduced nuclear arsenals. As part of that agreement, Belarus, Kazakhstan, and Ukraine had agreed to give up the nuclear weapons left in their states when the Soviet Union collapsed, and joined the NPT as non-nuclear-weapons states. This was a considerable coup for supporters of the NPT.

In addition to an environment more favorable to disarmament, the 1995 conference was the first that included all five of the nuclear-weapons states; as China and France had acceded to the treaty in March 1992 and August 1992, respectively.

Despite the positive steps on disarmament and events underscoring that the risk of proliferation was real, the supporters of the indefinite extension were taking no

chances given the checkered history of review conferences. Leading up to 1995, the prior four review conferences met with mixed success, with final documents being adopted by consensus in 1975 and 1985, but not 1980 and 1990. Some of the key issues that prevented consensus in 1980 and 1990 included what the non-nuclear-weapons states viewed as insufficient progress on a nuclear testing ban, failure by the nuclear-weapons states to issue security assurances, the slow pace of disarmament, and insufficient access to nuclear technology for peaceful purposes.

In 1980, the failure of the NPT to gain universal membership status also concerned a number of states, particularly in the Middle East. In 1990, the effectiveness of IAEA safeguards was being questioned, as several member states had yet to conclude safeguards arrangements with the IAEA and there were real concerns that member states were circumventing safeguards to pursue nuclear weapons. The ineffectiveness of the existing safeguards system would be further borne out by the case of Iraq in the following years.

Given the mixed record of success, proponents of the indefinite extension took steps to solidify support ahead of the Review Conference.

To further strengthen the case for extension, the United States made a critical decision to declare a nuclear testing moratorium and throw its support behind a negotiated nuclear test ban [12]. Failure to conclude a nuclear test ban treaty was cited by the Non-Aligned Movement (NAM) as further evidence of insufficient progress on disarmament. Anticipating resistance from this group unless progress was made, Washington dropped its prior insistence that any test ban treaty negotiations have a 10 year exit clause and worked to get the United Kingdom and France to drop the condition that testing could occur in ‘exceptional circumstances.’

The NAM also cited failure to make progress on negative security assurances from the nuclear-weapons-states as a point of contention. The nuclear-weapons-states took steps to address that concern as well. Negative security assurances were designed to protect non-nuclear-weapons-states from the threat of nuclear weapons by setting down conditions by which the nuclear-weapons-states would refrain from using, or threatening to use, nuclear weapons.

Shortly before the 1995 conference, the nuclear-weapons-states reached agreement on UN Security Council Resolution 984, which laid the groundwork for each state to submit letters outlining their negative security assurances to the council.

These efforts from the nuclear-weapons-states, combined with proliferation concerns, helped make the case for the extension. In the last two years leading up to the conference, a clear preference developed amongst a majority of states to extend the NPT in some form. Equally clear, however, was that a number of states outside of the Western Bloc wanted to attach conditions to the extension decision.

The process for extension was also debated ahead of the conference. By the second preparatory committee meeting, it had become clear that states favored trying to reach a consensus agreement on extension, rather than use the majority option allowed by the NPT text itself. However, there was division about the voting process. Some states pushed hard during the preparatory committee meetings for the vote to be taken in secret.

The process questions, as well as how to structure the agenda, continued to plague the preparatory meetings through the third gathering in September 1994. That preparatory committee ended without a path forward on a number of critical questions, such as defining the agenda and voting procedures for the extension conference, necessitating that a fourth preparatory committee meeting be held. It was also increasingly apparent that divisions between blocs would continue to contribute to the dynamics of the conference.

The Western Bloc, which numbered about 25 states, was comprised primarily of the United States, its NATO allies, and states under the US nuclear umbrella. The solidification of this bloc was hardly surprising, given that these states had lobbied other parties to the treaty to support extension in the years leading up to the 1995 conference.

The Eastern Bloc numbered about 20 states and was comprised primarily of Russia and the former Soviet Republics. It was less organized and did not have the same cohesion. Many of the Eastern states were aspiring to join NATO and as such, there was significant overlap between the Eastern and Western Blocs throughout the Review Conference, particularly given that both groups favored an indefinite extension.

The remaining (approximately) 100 states were primarily comprised of the NAM states. The NAM states opposed an unconditional, indefinite extension of the NPT, but the bloc had difficulty in crafting a consensus on the conditions that should be attached to any support for extension [12]. Most wanted to see greater progress on disarmament, but there was no agreement on the specific steps or timeframes.

Some analysts describe the Arab Group as a fourth bloc that played an influential role in the Review Conference. While this group of states certainly affected the outcome of the conference by insisting that the conference address the question of a zone free of weapons of mass destruction in the Middle East, the Arab Group operated more as a subgroup of the NAM during this period than an independent bloc, and supported a number of NAM positions.

Despite not agreeing on all issues, states in the Eastern and Western Blocs were cognizant that an organized effort by the NAM could defeat the prospect for extension and therefore it was critical to heed the concerns put forward by the bloc.

China, participating in its first Review Conference, did not align with any bloc and self-identified as a ‘group of one.’

While the fourth preparatory committee meeting managed to set out an agenda, an intercessional meeting was held April 14–15, prior to the opening of the conference, to seek a way forward on voting. The parties agreed that there would be a vote on extension May 10 if there was no consensus on the question of extension by that time. Even then, however, the question of the voting procedure remained outstanding, as some states continued to push for secret voting.

When the conference opened, a number of proposals attaching terms and conditions to the extension were offered. Several NAM states put forward proposals that would only extend the treaty for 25 years. Venezuela’s proposal would have extended the NPT for 25 years, after which another extension and review conference would take place to consider the state of the treaty at that point. Some states in the Western Bloc

suggested that successive 25 years extension conferences were not legally possible, given the text of Article X of the Treaty. Nigeria requested that the UN Secretariat study the legality of the proposal and present a legal interpretation of Article X.

The chair of the conference, Sri Lankan diplomat Jayanthana Danapala, noted in his memoir that a defining moment in the Review Conference took place when the South African Foreign Minister, Alfred Nzo, called for a declaration of principles on nuclear nonproliferation and disarmament as a ‘yardstick’ to measure treaty implementation and the strengthening of the review process [12]. Nzo also declared that South Africa would support the indefinite extension, if it included an agreement on how to measure progress on the NPT’s goals and objectives.

South Africa, the only state that had developed its own nuclear warheads and voluntarily gave them up and joined the NPT as a non-nuclear-weapons state in 1991, occupied a unique space. South Africa had a combination of nuclear expertise, political buy-in from its NAM partners, and disarmament credentials to push for additional steps to strengthen the treaty.

This idea of ‘principles’ to define and benchmark progress in implementing the NPT harkened back to past Review Conferences, where states’ parties, particularly the non-nuclear-weapons states, sought progress on areas less specifically defined by the Treaty but necessary to reach its ultimate goals, such as a testing ban and a fissile material production ban.

Danapala said he was interested in the South African proposal and asked the delegation to draft two documents; one on the principles to advance the NPT and one on measures to strengthen a review conference. The purpose, according to the chair, was to try and make the extension more palatable to the states that did not initially support an indefinite extension without conditions.

Mexico also delivered a statement that proposed linking progress on key issues to the unconditional, indefinite extension of the Treaty. Mexico circulated a working paper the first week of the conference that offered different proposals that could be ‘annexes’ to the extension decision.

The Mexican proposal outlined goals for progress in five key areas, including progress on a comprehensive test ban treaty, fissile material cut-off treaty, negative security assurances, options for strengthening the IAEA, and further steps by the nuclear-weapons states to progress toward disarmament [12].

The Mexican proposal also addressed the process for reviewing the NPT. The proposal suggested that each five-year review conference would:

- 1) retain three major committees,
- 2) seek to establish specific objectives,
- 3) establish ‘mechanisms’ to conduct negotiations,
- 4) commence the review conference with a review of compliance with the prior review conference commitments.

The draft Mexico submitted did not contain specific deadlines or timetables, rather it ‘urged’ progress in these key areas.

A subsequent draft from Mexico also included language on an indefinite extension and some of the ‘yardstick’ markers that South Africa proposed in its

statement, such as advancing nuclear-weapon free zones, facilitating access to peaceful uses of nuclear technology, and strengthening IAEA safeguards.

At this point, however, with just over a week before the May 10 vote, not all of the NAM states were on board with an indefinite extension. Indonesia was still behind the idea of a rolling 25 year extension coupled with a strengthened review process to examine progress toward the NPT's goals. Several of the NAM states expressed their intent to continue supporting this proposal.

By May 5, there were three drafts addressing the question of extension. The Mexico proposal and the Indonesian proposal, as described above, and a third resolution from Canada.

The Canadian proposal called for an indefinite and unconditional extension. There were no terms and conditions attached to the Canadian resolution and it was supported by 104 co-sponsors.

It was clear at that point that if consensus failed and the resolutions came to a vote, there was majority support for the Canadian proposal, which would have been enough to secure extension of the NPT. Several of the states on board with Canada's position, however, had vocally favored adding conditions to the terms of extension.

Based on his consultations, the chair sought to reach a consensus decision by developing a package that would ensure support of all states. The package agreement developed by the chair included three decisions and a resolution. While each would be considered separately, Danathapala's approach ensured an indefinite extension, while meeting the concerns that the NAM had about outlining specific steps toward disarmament.

The need for a resolution arose late in the conference when the Arab Group states party to the NPT introduced a draft document that called out Israel's nuclear program and stated that the country should accede to the NPT. Israel was widely believed to possess nuclear weapons, although the state has never publicly confirmed that point, preferring to maintain that Israel 'will not be the first to introduce nuclear weapons into the region.'

The Arab proposal also called for state parties to support practical steps to advance the goal of a weapons of mass destruction free zone (WMDFZ) in the Middle East with security assurances from the nuclear-weapons states.

Egypt was the principal architect of the push for progress on the zone and its push for language advancing the zone was not a surprise. In 1994, in the lead up to the Review Conference, Cairo informed Washington that it would not support an extension if Israel did not take 'concrete steps' toward NPT membership.

Unlike Article IV of the NPT, which stated that parties could undertake to negotiate nuclear-weapon free zones, the scope of the zone envisioned in the resolution was significantly broadened to include biological and chemical weapons, as well as delivery systems. While treaties banning both already existed, like the NPT, neither enjoyed universal adherence in the region. The Biological Weapons Convention also did not possess an established verification body or provision, adding to the challenge of negotiating such a zone. The three decisions and the resolution are summarized as follows:

Decision 1: Strengthening the review process

Decision 1 was built around the calls for a strengthened review conference, which had emerged as a theme during interventions by state parties early in the conference.

On May 1, Germany introduced a working paper that contributed to the substance of what became the decision on strengthening the review process. Germany's paper proposed that the three main committees remain and that additional ad hoc working groups be formed when necessary to address specific issues. This would become 'subsidiary bodies' in the final text of the decision. Three preparatory committee meetings would precede the Review Conference in the three years prior to the convening of the conference.

The paper also noted that the final documents of the review conference cycle should focus on reviewing progress since the last NPT review conference and outline steps that looked forward.

Canada's delegate to the conference, Ambassador Christopher Westdal described the goal of the decision as 'permanence with accountability.'

Decision 2: Principles and objectives

Decision 2 was built out of the concerns over the pace of disarmament raised by states such as South Africa. The May 9 draft compiled by the chair laid out a program of action for implementing Article VI of the treaty, including a negotiation of the CTBT by the end of 1996, an immediate start to FMCT talks, 'systematic and progressive efforts' to reduce the number of nuclear warheads worldwide, and security assurances beyond what had been offered by the nuclear-weapon states after passing UN Security Council Resolution 984. It did not, however, set specific timeframes or deadlines for completion of any steps, which the nuclear-weapons states opposed.

Decision 2 also addressed the growing interest in pursuing the full nuclear fuel cycle, its potential conflict with the nonproliferation elements of the NPT, and frustration by non-nuclear-weapons states over access to technology for peaceful purposes. The Decision noted the 'inalienable right' to peaceful uses of nuclear energy and said it must be pursued in accordance with Articles I, II, and III of the NPT. The Decision also supported the application of IAEA safeguards as a necessary precondition for states for nuclear cooperation agreements. While the NPT states parties are required to have safeguards, India and Pakistan, both of which developed civil and military nuclear programs outside of the NPT, had pushed to avoid linking full scope safeguards as a precondition for nuclear supply arrangements.

Decision 2 was also linked to Decision 1, which called for a strengthened review process, underscoring the linkage between the NPT Review Process as an opportunity to assess progress toward the Treaty's goals.

Given that the slow pace of disarmament and the failure to outline specific steps had plagued review conferences in the past, Danathapala described the adoption of the decision as a 'new chapter in the history of disarmament' and a 'relentless determination' by states parties to demand progress on disarmament.

Decision 3: Extension of the NPT as politically binding and legally binding

Decision 3 addressed the key question of extension. It stated that the treaty would be indefinitely extended based on the majority of states' parties supporting such a move.

Preambulatory language in Decision 3 emphasized the role of Decisions 1 and 2, demonstrating that while the Decisions were approved separately, support for the indefinite extension was linked to progress toward the NPT's goals. Highlighting the linkage in the extension decision was particularly important to gain the support of certain NAM states, who wanted it to be clear that support for the extension was prefaced on the additional action on disarmament. Other paragraphs in the preamble noted that full compliance and universal adherence to the treaty was essential to peace and security, as is the ultimate goal of disarmament.

Resolution on a Middle East WMD free zone

Danathapala sought to ensure that the zone issue did not prevent consensus on the question of extension, but at the same time was wary of calling out Israel by name. Egypt's resolution did not mention other Arab League states in the region not yet party to the NPT: Djibouti, Oman, and the United Arab Emirates.

Danathapala compromised by drafting language that called on all remaining states in the region that were not party to the NPT to accede to it, and to accept full scope IAEA safeguards. It called on all states in the region to support efforts to establish the zone and refrain from actions that would prevent realization of the proposal. It also called on parties to the NPT, particularly nuclear weapons states, to cooperate to ensure the 'early establishment' of a zone free of weapons of mass destruction in the region. Egypt would not sponsor the resolution with this language, nor would any other Arab group state, so he called on the United States, the United Kingdom, and Russia, as depositaries for the NPT, to co-sponsor the resolution.

While the adoption of the resolution helped secure consensus support for NPT extension, failure to make progress on the zone would later complicate NPT efforts, as discussed in chapter 4.

Ultimately, the resolution with the compromise language that called for steps toward the zone and referenced universality was adopted without a vote on May 11, after three decisions, thus securing the indefinite extension of the NPT. Despite the success in negotiating the extension, the review element of the 1995 conference did not result in a final document.

References

- [1] Johnson Library, National Security File, Country File 1967 *Addendum, USSR, Glassboro Memcons* Top Secret; Nodis. Drafted by Krimer (June 23, 1967) <https://history.state.gov/historicaldocuments/frus1964-68v14/d231>
- [2] Arms Control Association Factsheet 2017 *US-Russia Arms Control Agreements at a Glance* (Arms Control Association, June 2017) <https://www.armscontrol.org/factsheets/USRussiaNuclearAgreements>
- [3] Arms Control Association Factsheet 2017 *Intermediate Nuclear Forces Treaty at a Glance* (Arms Control Association, December 2017) <https://www.armscontrol.org/factsheets/INFtreaty>

- [4] Pifer S 2011 The trilateral process: The United States, Ukraine, Russia, and nuclear weapons *Brookings Arms Control Series Paper* 6 (May 2011)
- [5] Arms Control Association Factsheet 2014 *The Lisbon Protocol at a Glance* (Arms Control Association, March 2014) <https://www.armscontrol.org/node/3289>
- [6] Friedman U 2017 Why one president gave up his country's nukes *The Atlantic* (September 9, 2017) <https://www.theatlantic.com/international/archive/2017/09/north-korea-south-africa/539265/>
- [7] Kay D 1991 *Nuclear Weapons in Iraq* Testimony to the U.S. Senate Foreign Relations Committee (October 17, 1991)
- [8] Hirsch T 2004 The IAEA additional protocol: What it is and why it matters *Nonproliferation Rev.* (Fall/Winter) pp 140–66
- [9] International Atomic Energy Agency *Strengthening Measures of the Additional Protocol* <https://www.iaea.org/topics/additional-protocol/strengthening-measures> (last accessed November 5, 2017)
- [10] Hibbs M 2012 The unspectacular future of the additional protocol *Carnegie Endowment for Int. Peace* (April 26, 2012) <http://carnegieendowment.org/2012/04/26/unspectacular-future-of-iaea-additional-protocol-pub-47964>
- [11] Rydell R 2005 Looking back: The 1995 nuclear nonproliferation treaty review conference *Arms Control Today* (April)
- [12] Dhanapala J and Rydell R 2005 *Multilateral Diplomacy and the NPT: An Insiders Account* (Geneva: United Nations Institute for Disarmament Research)

The Nuclear Nonproliferation Treaty

Kelsey Davenport

Chapter 4

A crumbling cornerstone? Future challenges to the NPT

4.1 The Middle East WMD free zone debate

As noted in the previous chapter, the commitment to pursue a Middle East free of weapons of mass destruction (WMD) was a key requirement to gain support from the Arab Group and, to a lesser extent the NAM, to achieve consensus on the decision to indefinitely extend the NPT in 1995.

While the resolution passed in 1995 did not contain specific timelines for progress, the consensus Final Document agreed to at the 2010 NPT Review Conference stipulated that a conference on the zone should take place by the end of 2012 and reaffirmed the commitment to ‘full implementation’ of the 1995 resolution. The deadline for holding the conference was included after the Arab Group expressed frustration over the failure to make progress on realizing the intent of the 1995 Resolution.

Initially, some limited progress was made toward a conference after the 2010 NPT Review Conference. The United States, the United Kingdom, and Russia, the three sponsors of the 1995 resolution, were named as the conveners of the conference. Finland was designated as the host of the conference in October 2011, when Finnish Undersecretary of State Jaakko Laajava was named as facilitator. Laajava began working with the states in the region to develop an agenda for a conference in December 2012.

Despite these steps, the three conveners issued statements on November 23, 2012, announcing that the conference would be postponed. The US statement on the postponement said that the delay was due to disagreement among states in the region on the broad, underlying ‘core issues,’ such as the agenda and ‘modalities’ of the conference. The US said that the states in the region needed to make progress on resolving the fundamental differences over the agenda before a conference could be held. The United Kingdom and Russia both called for the conference to be held

in 2013, with Russia specifying that a new date no later than April should be ‘fixed right now.’

The Arab League was more pointed in its statement, blaming the failure of the conference on Israel’s refusal to agree to attend the December conference, and rejecting the idea of postponement. In a statement on November 25, 2012, Arab League Secretary-General Nabil Elaraby said that the group rejected ‘any attempts’ to postpone the conference and that Israel is the only country in the region that has not expressed ‘willingness to participate’ in the December meeting.

The Egyptian statement said postponing the conference was a ‘breach of the decision’ at the 2010 NPT Review Conference to hold the conference in 2012 and that the decision would have ‘negative consequences’ for the 2015 NPT Review Conference [1].

Despite calls from the three conveners for states in the region to take steps to agree on an agenda, the conference was never held. Lajaava did meet five times with the Arab League states and Israel (Iran was occupied during much of the following years leading up the Review Conference in 2015 by multilateral negotiations over its nuclear program), in an effort to reach consensus on the conference agenda.

Despite Lajaava’s efforts, the Arab Group and Israel could not agree on an agenda ahead of the 2015 NPT Review Conference. In general, the two sides differed over whether or not to include discussions on regional security issues on the agenda, with Israel arguing in favor of such an inclusion. At the Review Conference, the Arab Group, led by Egypt, pressed for the final document to contain specific deadlines for the zone, which Israel objected to. Israel, as a non-NPT member could not formally participate in the Review Conference but attended as an observer. The United States and several other states’ parties to the NPT shared Israel’s concern of setting specific timelines for advancing the zone.

Despite these objections, the draft final document called for the UN Secretary-General to convene a conference by March 1, 2016, aimed at ‘launching a continuous process of negotiating and concluding a legally binding treaty’ that establishes a WMD-free zone in the Middle East. The document called for the Secretary-General to appoint a special representative to facilitate the process by July 1. The facilitator would work with the Secretary-General, as well as Russia, the UK, and the United States, to consult with the states in the region on the agenda for the conference.

Under the language in the draft document, if an agenda for the conference was agreed before the March deadline, the Secretary-General would have to convene the conference within 45 days of agreement on the agenda.

The United States, Canada, and the United Kingdom broke with consensus on the final document over these timelines. In remarks on May 22, the last day of the four-week-long conference at the United Nations, Rose Gottemoeller, US Undersecretary of State for arms control and international security, said that the United States would have been prepared to endorse the rest of the draft document, covering the three so-called pillars of the treaty—disarmament, nonproliferation, and peaceful uses of nuclear energy. Gottemoeller said the blame ‘lies squarely with those states that were unable to show any flexibility in pursuit of the convening of a

Middle East conference that enshrined the principles of consensus and equality [2].’ Canada and the United Kingdom joined the United States in objecting to the draft document because of the language dealing with the WMD-free zone.

With the failure to adopt a Final Document, the mandate for Laajava to continue consultations toward a zone ended. At the 2017 Preparatory Committee meeting, the first in a process leading up to the 2020 Review Conference, Arab Group states continued to express frustration over the lack of progress on the zone as a failure to achieve the intent of the 1995 Resolution. Given that the failure to achieve consensus at the 2015 Review Conference ended the NPT mandate for convening the states in the region to advance the zone, it is difficult to see what progress can be made in the lead up to 2020.

If the Arab Group continues to insist that the review conference final documents address the zone and set specific deadlines, particularly while there is still no agreement on the agenda, it is difficult to see how a compromise can be reached to prevent deadlock at the 2020 NPT Review Conference. In an attempt to bridge the gap, Russia submitted a working paper to the 2017 NPT preparatory meeting on the Middle East zone, that called for part of the agenda to include talks on regional security, a key point for Israel, but it remains to be seen if the Russian approach will be pursued.

Failing to make progress not only risks consensus on a final document for the 2020 NPT Review Conference, but could, over time, erode support for the NPT, and proposals to strengthen it, given that the Arab Group conditioned support for the 1995 Extension on the Middle East resolution.

4.2 Interpreting Article VI’s disarmament obligations

While several members of the ENDC, such as Mexico, pushed for the inclusion of specific steps on disarmament in the NPT during its negotiation, the United States and the Soviet Union succeeded in persuading the other states that the inclusion of specific steps would prolong, and perhaps endanger, the prospects of concluding a final treaty and were unnecessary.

The question of whether or not pursuing additional disarmament commitments would have prevented the negotiation of the NPT cannot be definitively answered. However, dispute over disarmament obligations and the pace of disarmament progress continues to plague the NPT.

As mentioned in chapter 3, disarmament obligations have been a point of contention since the first five-year review conference in 1975. Negotiating the extension of the NPT was complicated by this very concern, and one of the decisions that accompanied the extension addressed additional disarmament steps, such as negotiating the CTBT, progress on the FMCT, reduction in warhead stockpiles and negative security assurances. The 1995 Principle and Objectives Decision, however, failed to accelerate disarmament in the way that many non-nuclear-weapon states hoped it would.

This is not to say there has been no progress toward disarmament since 1995. The CTBT was negotiated in 1996, the United Kingdom made unilateral cuts to its

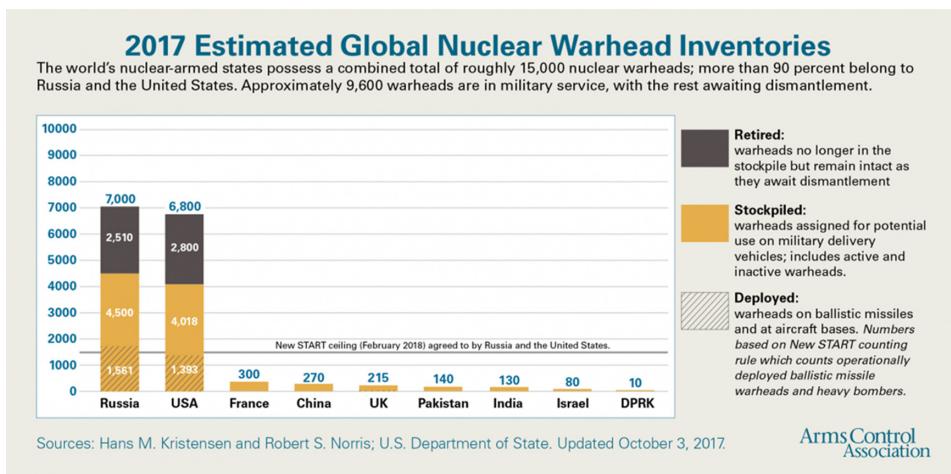


Figure 4.1. Currently nine states possess nuclear weapons, five of which are the nuclear-armed states recognized by the NPT. The non-nuclear states cite frustration with the slow pace of disarmament as a failure to realize Article VI of the NPT. Credit: Arms Control Association.

nuclear forces, and several states strengthened declaratory policies. The United States and Russia pursued additional cuts to their nuclear arsenals and in 2011 the New START agreement entered into force. New START set limits on the number of deployed warheads and delivery systems. Both the United States and Russia were required to reduce the number of deployed ICBMs, SLBMs, and bombers to below 700 and the number of warheads to 1550 by February 5, 2018. Both states met the restriction, which will remain in place until February 2021 (see figure 4.1).

Despite the most recent New START cuts, nearly 60 years after entry into force of the NPT, the nuclear-weapons states still possess more than 14 000 nuclear warheads and China's nuclear arsenal is believed to be expanding. Additionally, attempts to negotiate a fissile material cut-off treaty remained stalled and, more than 20 years after its negotiation, the CTBT has still not entered into force. Russia, China, and the United States are pursuing new missiles and bombers, as well as refurbished warheads, which some non-nuclear-weapons states argue constitute violations of Article VI commitments because they would be 'new' nuclear weapons.

Additionally, in 2018, US President Donald Trump released a Nuclear Posture Review calling for the introduction of new, additional low-yield nuclear warheads to the US arsenal and expanding the scenarios under which the United States would use nuclear weapons [3].

All of these areas represent significant frustrations, particularly for states arguing that the grand bargain of the NPT is not being realized.

The imprecise language of Article VI contributes to the frustration. In addition to not setting specific milestones, the text itself is interpreted in different ways.

In a 2017 interview, one of the Soviet negotiators Roland Timberbaev said that the negotiations 'never planned to incorporate Articles IV and VI in their current shape into the treaty, and I believe these two articles to be weakest of all.' He said

that the ‘current state of affairs and the discussion on the nuclear disarmament issues have, in many ways, become hostage to the wording used in article VI [4].’

The language, which includes ‘negotiations in good faith’ and ‘effective measures’ are difficult to define, resulting in subjective assessments of the progress, or lack thereof. In 1996 the International Court of Justice (ICJ) weighed in on the meaning of Article VI in its advisory opinion of the ‘Legality of the Threat or Use of Nuclear Weapons.’ The ICJ decision is nonbinding and some legal experts questioned whether the Court exceeded its authority by weighing in with an interpretation of Article VI. Other states have used the advisory opinion to bolster the case that nuclear-weapon states are failing to meet their disarmament obligations.

The ICJ noted that nuclear-weapons states have ‘an obligation to achieve a precise result,’ complete nuclear disarmament, by pursuing negotiations [5]. Critics of the ICJ decision argue that the Court went too far in asserting that the Article IV requirement ‘to negotiate in good faith’ imposed an obligation to achieve a ‘precise result.’ The implication that concluding negotiations on a disarmament instrument goes beyond other interpretations of Article VI, which states that parties are only obligated to pursue good-faith negotiations toward disarmament, an end to the nuclear arms race, and a treaty on general and complete disarmament [6].

Arguably, the obligation to pursue an early end of the nuclear arms race has been met. While some states are voicing concerns that the nuclear modernization programs that the nuclear-weapons states are pursuing is pushing the world toward a new arms race, the US–Soviet rivalry that escalated to increasingly higher numbers ended, and arms control agreements have significantly reduced the number of nuclear weapons worldwide from a peak of more than 70 000 nuclear weapons in 1986 to around 14 500 nuclear weapons in 2017.

The widening gap between the nuclear-weapons states and the non-nuclear-weapons states is primarily driven by whether or not the former has undertaken negotiations in good faith to pursue steps toward disarmament and a treaty on general and complete disarmament. Some of the non-nuclear-weapons states arguing that the nuclear-weapons states have not met their obligations cite the 1996 ICJ advisory opinion as evidence that Article VI can be interpreted to require a precise result and that the failure to commence negotiations on a disarmament treaty means that Article VI obligations have not been fully realized.

The clash over disarmament obligations contributed to tensions at the 2015 NPT Review Conference. While disagreement over setting timelines for advancing a Middle East WMD free-zone caused a break in consensus, disagreements over disarmament featured heavily in contentious debates over the course of the four-week conference.

Additionally, the draft final document for the 2015 Review Conference was heavily criticized by a number of non-nuclear-weapons states for its failure to include new commitments and timelines for accelerating the action plan agreed to at the 2010 NPT Review Conference. In the 2010 action plan the nuclear-weapons states agreed to ‘accelerate concrete progress on the steps leading to nuclear disarmament.’ Several of the steps included reductions of ‘all types’ of nuclear weapons and entry into force of the CTBT [7]. The 2015 draft Final Document,

which acknowledged that New START was a positive step, only encouraged Russia and the United States to engage in follow-on negotiations to New START.

There was less progress on the CTBT. Negotiation of a test ban treaty by 1996 was part of the 1995 package to extend the NPT. While the treaty was negotiated as specified in the extension package, it has yet to enter into force and current prospects look dim, as the United States, China, India, Pakistan, Israel, Iran, Egypt and North Korea must complete ratification for the treaty to be legally binding.

Several non-nuclear-weapons states also pointed toward the failure by the nuclear-weapons states to take additional steps to reduce the risk of accidental use of nuclear weapons by taking actions such as eliminating prompt launch measures, as spelled out in the 2010 Action Plan.

Alexander Kmentt, who represented the Austrian government at the 2015 Review Conference said in a statement delivered on behalf of 49 states that there is a ‘reality gap, a credibility gap, a confidence gap, and a moral gap,’ on disarmament between the non-nuclear-weapons states and the nuclear-weapons states. During the review conference, Kmennt had called for a final document with ‘clear obligations, concrete commitments, and timelines [8].’

The slow pace on disarmament spurred a group of states to pursue a set of conferences on the humanitarian consequences of nuclear weapons. Outside of the NPT framework, the three conferences held in Oslo, Nayerit Mexico, and Vienna between 2013–4 focused on the human and environmental costs of nuclear weapons. Any state was welcome to participate, but the only recognized nuclear-weapons states to attend any of the conferences were the United States and the United Kingdom. Both observed the Vienna meeting in December 2014.

The December 2014 conference in Vienna invited states to sign a pledge, calling on all NPT state parties to renew their commitment to Article IV of the NPT and take steps to reduce the risks of nuclear weapons use.

The humanitarian conferences, failure to make progress on further disarmament measures, and the Austrian pledge inspired a core group of states to pursue a UN General Assembly resolution calling for an open-ended working group to take forward multilateral nuclear disarmament negotiations. A similar working group would have been created by the 2015 Review Conference document, if it were adopted.

The UN mandated working group met several times in 2016 and ultimately produced a report in August calling for the negotiation of a treaty to ban nuclear weapons. The working group’s report to the United Nations General Assembly generated a resolution to begin negotiations on such a treaty.

The nuclear-weapons states all opposed the resolution to draft the ban treaty, and actively campaigned against it. The United States said it could give the states the option to ‘forum-shop’ and undermine the centrality of the NPT. Washington also argued that it would distract from other initiatives underway, including the fissile material cut-off treaty.

Despite these arguments, the UN General Assembly passed the resolution 135–12, with 33 abstentions, on December 23, 2016.

The following year after two negotiating sessions, in July 2017, the drafters produced what is now known as the Treaty on the Prohibition of Nuclear Weapons,

or the Ban Treaty, as it is commonly called. The treaty prohibits the use, threat of use, development, acquisition, and possession of nuclear weapons. The treaty requires, at a minimum, a comprehensive safeguards agreement with the IAEA. If a state with nuclear weapons joins the treaty, it must either dismantle its nuclear program prior to accession or cooperate with an international authority to verify dismantlement.

The treaty also contains provisions obligating state parties to provide aid to victims and assistance in environmental efforts in the event of the use of nuclear weapons.

Of the 124 states participating in the drafting, 122 voted in favor of it. The Netherlands, the sole vote against, was the only state under the US nuclear umbrella to participate in the negotiations. None of the nuclear armed states, those recognized by the NPT and those outside of the treaty, participated in the talks.

While the prohibition treaty has yet to enter into force, its existence is divisive and could prove an impediment to the NPT Review Conference in 2020. While the US concern that the ban treaty could result in states ‘forum shopping’ and leaving the NPT is likely overblown—it seems improbable that a state would withdraw from the NPT and only remain party to the Prohibition Treaty—the failure to make new progress on arms control talks will likely continue to spur the same frustration that drove the ban treaty. Failure to articulate new steps toward realizing Article VI risks further strain to the NPT and will likely continue to drive frustrated non-nuclear-weapons states to support the ban treaty.

4.3 The North Korea nuclear crisis

North Korea’s nuclear weapons program remains a challenge to the NPT, despite Pyongyang’s assertion that it withdrew from the treaty in 2003. The withdrawal is not recognized because North Korea did not give 90 days of consecutive notice prior to withdrawing, as required by NPT, but Pyongyang maintains that it is no longer bound by its treaty obligations. Pyongyang’s continued development of nuclear weapons risks further destabilizing East Asia and poses a proliferation risk.

From the beginning, North Korea was a reluctant participant in the NPT. North Korea acceded to the treaty in 1985, but failed to complete the required safeguards agreement with the IAEA in the requisite 18 months following ratification. North Korea linked this decision to stall to the presence of US nuclear weapons in South Korea. While not publicly acknowledged at the time, the US tactical nuclear weapons were first deployed in South Korea back in 1958. The following year, North Korea reached a civil nuclear cooperation agreement with the Soviet Union. Pyongyang would later use facilities and training from that agreement in its nuclear weapons program.

North Korea’s slow movement on its safeguards agreement was particularly significant given its rapid expansion at the Yongbyon nuclear site during the 1980s. At the time of its NPT ratification, North Korea was constructing a 5 MW heavy water reactor that would later provide the material for its nuclear weapons. Pyongyang also bargained for additional Soviet assistance on light water reactors

in return for its decision to sign the NPT. Preliminary work began on these reactors, but they were never completed. Pyongyang also undertook additional activities that would be relevant to developing nuclear weapons, including experiments with high explosive testing, although it is unclear if North Korea had definitively decided in favor of pursuing nuclear weapons or if they were pursuing a hedging strategy [5].

After the United States decided to withdraw tactical nuclear weapons deployed in South Korea, North Korea and South Korea signed the Joint Declaration on the Denuclearization of the Korean Peninsula on December 31, 1991. Under the terms of the declaration, both states agreed not to ‘test, manufacture, produce, receive, possess, store, deploy or use nuclear weapons.’ The declaration also said that both states would not ‘possess nuclear reprocessing and uranium enrichment facilities [9].’

At this point, North Korea was already pursuing plutonium reprocessing and was likely exploring uranium enrichment for an illicit weapons program. But as a result of the declaration, Pyongyang finally finalized its nuclear safeguards agreement with the IAEA in January 1992.

From the outset, IAEA inspectors discovered discrepancies in North Korea’s nuclear declaration. In September 1992, the agency asked North Korea for clarifications on several issues, including the amount of reprocessed plutonium stored in Pyongyang’s possession. This led to an IAEA request to conduct special inspections at two nuclear waste sites, but North Korea declared that the areas in question were military facilities and off limits for inspectors [5].

The special inspection request also spurred North Korea to announce its withdrawal from the NPT in 1993. North Korea waited 89 of the 90 days required under Article X of the treaty, then announced it would postpone its withdrawal.

The United States played a significant role in urging North Korea to remain a party to the NPT. The two states reached an agreement in June 1994 that became known as the Agreed Framework. Under the terms of the Agreed Framework, North Korea agreed to freeze its plutonium production activities and allow IAEA inspectors to verify its nuclear program. North Korea also agreed to the removal of 8000 spent fuel rods to a third-party state and halt construction on the reactors it was building in Nyonbyon and Tauchon. In exchange, North Korea was to receive assistance on acquiring two light water reactors and shipments of heavy fuel oil. A multinational consortium, KEDO, was set up to finance and construct the reactors, but progress on the reactors was beset by delays.

Initially, both the United States and North Korea abided by the terms of the Agreed Framework. Implementation of the Agreed Framework, however, began to fall apart during the George W Bush presidency. In October 2002, the Bush Administration stated publicly that North Korea admitted to a clandestine uranium enrichment program after being confronted by the United States. That led North Korea to again announce it was withdrawing from the NPT in 2003. North Korea, however, stated that it only needed to give one day’s notice before its exit from the NPT would be final, citing the 89 days of notice given in 1993 before North Korea decided to suspend its withdrawal.

In 2003, in response to North Korea’s decision to withdraw from the NPT and the deterioration of the Agreed Framework, China proposed convening a multilateral

negotiating forum to address issues with North Korea. The so-called six parties included China, Japan, Russia, South Korea, North Korea and the United States.

After several rounds of talks the parties issued a joint statement in September 2005 outlining the steps agreed upon toward denuclearization of the Korean peninsula. The statement said that the parties agreed on denuclearization ‘in a phased manner in line with the principle of commitment for commitment, action for action [10].’

On the North Korea side, Pyongyang committed to abandon its nuclear weapons program, return to the NPT, and allow IAEA inspectors back into the country.

In return, the five states in negotiation with North Korea—China, Japan, Russia, South Korea, and the United States—acknowledged North Korea’s peaceful nuclear program and agreed to help North Korea acquire a proliferation resistant light water reactor ‘at an appropriate time.’ The five countries also committed to help North Korea with additional energy resources and the United States and South Korea agreed to refrain from deploying nuclear weapons in South Korea. Washington and Tokyo also agreed to pursue a normalization of relations with Pyongyang. The parties agreed to meet further to work out details on timing and the next steps of the agreed upon provisions.

Despite this progress, North Korea conducted its first nuclear test October 9, 2006. This test prompted the UN Security Council to pass Resolution 1718 five days later, which required North Korea to refrain from any additional nuclear and missile testing. Despite these developments, the Six Party Talks resumed in 2007, and in June of that year the IAEA confirmed that North Korea had shut down the 5 MW reactor at Yongbyon.

The talks continued through 2009, when, following another round of UN sanctions in response to its satellite launch, North Korea stated it would no longer participate in the process or abide by the agreements reached during the talks.

North Korea kicked out IAEA inspectors. To date, the country has conducted six nuclear tests, including what was likely a hydrogen bomb test in September 2017 (see figure 4.2), and has developed several nuclear-capable ballistic missiles, including an ICBM capable of targeting the United States. Much of the progress has taken place since Kim Jong Un took over as leader after his father, Kim Jong Il, died in December 2011.

The international community has responded largely with sanctions and diplomatic isolation. Beginning in 2006, the UN Security Council has passed nine major resolutions that call for North Korea to halt its nuclear and missiles activities and impose sanctions against the country. Additionally, the United States, South Korea, and many other states have passed unilateral sanctions targeting Pyongyang.

Despite the pressure, North Korea continues to expand its nuclear program. Beginning in 2013, it restarted the reactor dismantled as part of the Six Party Talks process and as of 2018, likely possesses enough fissile material for an estimated 20–60 nuclear weapons. This trend of North Korea advancing its nuclear weapons and ballistic missile programs, while the international community responded to provocative developments with additional sanctions, continued through 2017. In mid-2017, tensions between the United States and North Korea escalated dramatically.



Figure 4.2. North Korean leader Kim Jong Un inspects a nuclear device in March 2017. Credit: KCNA.

In July, after North Korea tested a ballistic missiles that flew over Japan and have a range capable of targeting parts of the United States, US President Donald Trump and North Korean leader Kim Jong Un exchanged threats, raising the possibility of military action or inadvertent escalation to conflict.

These tensions continued throughout the fall, as Trump insulted Kim at the UN General Assembly and North Korea later tested what may have been a hydrogen bomb, with an estimated yield of 200–250 kilotons and a nuclear-capable ICBM that could reach any part of the United States.

Tensions cooled in 2018, as South Korean President Moon Jae In embarked on a diplomatic effort to engage with North Korea and Kim stated that his country's strategic objectives for the nuclear weapons program were met. Kim indicated that North Korea was shifting away from testing to mass production of nuclear weapons and having developed a nuclear deterrent, was open to negotiations. Kim later issued a voluntary nuclear and long-range missile test moratorium and blew up tunnels used for nuclear testing.

As part of Moon's diplomatic overture, Kim offered to meet with Trump, and the two leaders met for an historic summit in June 2018 in Singapore.

The Singapore summit produced a document that both Trump and Kim signed, committing the United States and North Korea to 'complete denuclearization of the Korean peninsula' and working to build a peace regime.

A peace regime and an end to the so-called US hostile policy are frequently listed by North Korea as preconditions for nuclear disarmament, as is the removal of US nuclear assets from the region.

While the talks have stabilized the situation on the Korean peninsula, it remains to be seen if North Korea is sincere in its offer to discuss ‘denuclearization’ and if the negotiations will result in concrete actions.

It remains unlikely that states in the region threatened by North Korea, such as Japan and South Korea, would choose to withdraw or violate the NPT by developing their own nuclear arsenals. However, so long as North Korea continues to defy its international obligations and retain nuclear weapons, that risk exists, as does the threat of North Korea selling nuclear weapons’ related materials and technologies to other states, or non-state actors.

North Korea is widely believed to have assisted Syria in building the unfinished nuclear reactor that Israel bombed in 2007 and likely provided assistance to the Libyan nuclear weapons program [11]. Shipments of dual-use materials originating from North Korea continue to be interdicted. While there is no indication that North Korea has illicitly transferred fissile material or a complete nuclear device, its willingness to defy international law and past proliferation record speaks of the proliferation threat that North Korea’s nuclear program will continue to pose unless checked by a diplomatic agreement that leads to denuclearization.

In addition to the proliferation risk, the North Korea case also illustrates an unresolved challenge of the NPT. While Article X gives states the option to withdraw from the Treaty, there is no mechanism for regaining nuclear technology transferred to the withdrawing state. As a result, when the state is no longer bound by the NPT, it could use nuclear materials and technologies transferred to it in line with Article IV for a nuclear weapons program. Some suppliers of nuclear technology request assurance before engaging in nuclear cooperation that the transferred technologies and materials will be subject to safeguards and will be returned if the state no longer intends to use them solely for peaceful purposes. But it is difficult to see how these assurances could be enforced.

Taken together, the proliferation risk posed by North Korea and the unresolved tension in Article X, continue to plague the NPT.

References

- [1] Davenport K and Horner D 2012 Meeting on Middle East WMD postponed *Arms Control Today* (December)
- [2] Davenport K 2015 Mideast zone meeting stymies NPT meeting *Arms Control Today* (June)
- [3] Nuclear Posture Review 2018 (Office of the Secretary of Defense, February 2, 2018) <https://media.defense.gov/2018/Feb/02/2001872886/-1/-1/2018-NUCLEAR-POSTURE-REVIEW-FINAL-REPORT.PDF>
- [4] Timberbav R 2017 The nuclear nonproliferation treaty has largely achieved its goals *Arms Control Today* (September)
- [5] 1996 Legality of the threat or use of nuclear weapons *Advisory Opinion* ICJ GL No 95, [1996] ICJ Rep 226, ICGJ 205 (ICJ 1996) (8th July 1996)

- [6] Ford C A 2007 Debating disarmament: Interpreting Article VI of the treaty on the non-proliferation of nuclear weapons *Nonproliferation Rev.* **14**
- [7] Final Document 2010 *Rev. Conf.of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons* vol I NPT/ CONF.2010/50
- [8] Kimball D G and Reif K 2015 NPT conference fails to reach consensus *Arms Control Today* (June)
- [9] Joint Declaration of South and North Korea on the Denuclearization of the Korean Peninsula (January 20, 1992) <http://www.nti.org/media/pdfs/aptkoreanuc.pdf>
- [10] 2012 Arms Control Association Factsheet *The Six Party Talks At a Glance* (Arms Control Association) updated July 2017 <https://www.armscontrol.org/factsheets/6partytalks>
- [11] Arms Control Association Factsheet *Arms Control and Proliferation Profile: Syria* (Arms Control Association) last updated December 2017 <https://www.armscontrol.org/factsheets/syriaprofile>

The Nuclear Nonproliferation Treaty

Kelsey Davenport

Appendix A

Treaty on the Nonproliferation of Nuclear Weapons (NPT)

The States concluding this Treaty, hereinafter referred to as the Parties to the Treaty,

Considering the devastation that would be visited upon all mankind by a nuclear war and the consequent need to make every effort to avert the danger of such a war and to take measures to safeguard the security of peoples,

Believing that the proliferation of nuclear weapons would seriously enhance the danger of nuclear war,

In conformity with resolutions of the United Nations General Assembly calling for the conclusion of an agreement on the prevention of wider dissemination of nuclear weapons,

Undertaking to co-operate in facilitating the application of International Atomic Energy Agency safeguards on peaceful nuclear activities,

Expressing their support for research, development and other efforts to further the application, within the framework of the International Atomic Energy Agency safeguards system, of the principle of safeguarding effectively the flow of source and special fissionable materials by use of instruments and other techniques at certain strategic points,

Affirming the principle that the benefits of peaceful applications of nuclear technology, including any technological by-products which may be derived by nuclear-weapon States from the development of nuclear explosive devices, should be available for peaceful purposes to all Parties to the Treaty, whether nuclear-weapon or non-nuclear-weapon States,

Convinced that, in furtherance of this principle, all Parties to the Treaty are entitled to participate in the fullest possible exchange of scientific information for, and to contribute alone or in co-operation with other States to, the further development of the applications of atomic energy for peaceful purposes,

Declaring their intention to achieve at the earliest possible date the cessation of the nuclear arms race and to undertake effective measures in the direction of nuclear disarmament,

Urging the co-operation of all States in the attainment of this objective,

Recalling the determination expressed by the Parties to the 1963 Treaty banning nuclear weapons tests in the atmosphere, in outer space and under water in its Preamble to seek to achieve the discontinuance of all test explosions of nuclear weapons for all time and to continue negotiations to this end,

Desiring to further the easing of international tension and the strengthening of trust between States in order to facilitate the cessation of the manufacture of nuclear weapons, the liquidation of all their existing stockpiles, and the elimination from national arsenals of nuclear weapons and the means of their delivery pursuant to a Treaty on general and complete disarmament under strict and effective international control,

Recalling that, in accordance with the Charter of the United Nations, States must refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any State, or in any other manner inconsistent with the Purposes of the United Nations, and that the establishment and maintenance of international peace and security are to be promoted with the least diversion for armaments of the world's human and economic resources,

Have agreed as follows:

Article I

Each nuclear-weapon State Party to the Treaty undertakes not to transfer to any recipient whatsoever nuclear weapons or other nuclear explosive devices or control over such weapons or explosive devices directly, or indirectly; and not in any way to assist, encourage, or induce any non-nuclear-weapon State to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices, or control over such weapons or explosive devices.

Article II

Each non-nuclear-weapon State Party to the Treaty undertakes not to receive the transfer from any transferor whatsoever of nuclear weapons or other nuclear explosive devices or of control over such weapons or explosive devices directly, or indirectly; not to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices; and not to seek or receive any assistance in the manufacture of nuclear weapons or other nuclear explosive devices.

Article III

1. Each non-nuclear-weapon State Party to the Treaty undertakes to accept safeguards, as set forth in an agreement to be negotiated and concluded with the International Atomic Energy Agency in accordance with the Statute of the International Atomic Energy Agency and the Agency's safeguards

system, for the exclusive purpose of verification of the fulfilment of its obligations assumed under this Treaty with a view to preventing diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices. Procedures for the safeguards required by this Article shall be followed with respect to source or special fissionable material whether it is being produced, processed or used in any principal nuclear facility or is outside any such facility. The safeguards required by this Article shall be applied on all source or special fissionable material in all peaceful nuclear activities within the territory of such State, under its jurisdiction, or carried out under its control anywhere.

2. Each State Party to the Treaty undertakes not to provide: (a) source or special fissionable material, or (b) equipment or material especially designed or prepared for the processing, use or production of special fissionable material, to any non-nuclear-weapon State for peaceful purposes, unless the source or special fissionable material shall be subject to the safeguards required by this Article.
3. The safeguards required by this Article shall be implemented in a manner designed to comply with Article IV of this Treaty, and to avoid hampering the economic or technological development of the Parties or international co-operation in the field of peaceful nuclear activities, including the international exchange of nuclear material and equipment for the processing, use or production of nuclear material for peaceful purposes in accordance with the provisions of this Article and the principle of safeguarding set forth in the Preamble of the Treaty.
4. Non-nuclear-weapon States Party to the Treaty shall conclude agreements with the International Atomic Energy Agency to meet the requirements of this Article either individually or together with other States in accordance with the Statute of the International Atomic Energy Agency. Negotiation of such agreements shall commence within 180 days from the original entry into force of this Treaty. For States depositing their instruments of ratification or accession after the 180-day period, negotiation of such agreements shall commence not later than the date of such deposit. Such agreements shall enter into force not later than eighteen months after the date of initiation of negotiations.

Article IV

1. Nothing in this Treaty shall be interpreted as affecting the inalienable right of all the Parties to the Treaty to develop research, production and use of nuclear energy for peaceful purposes without discrimination and in conformity with Articles I and II of this Treaty.
2. All the Parties to the Treaty undertake to facilitate, and have the right to participate in, the fullest possible exchange of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy. Parties to the Treaty in a position to do so shall also co-operate in

contributing alone or together with other States or international organizations to the further development of the applications of nuclear energy for peaceful purposes, especially in the territories of non-nuclear-weapon States Party to the Treaty, with due consideration for the needs of the developing areas of the world.

Article V

Each Party to the Treaty undertakes to take appropriate measures to ensure that, in accordance with this Treaty, under appropriate international observation and through appropriate international procedures, potential benefits from any peaceful applications of nuclear explosions will be made available to non-nuclear-weapon States Party to the Treaty on a non-discriminatory basis and that the charge to such Parties for the explosive devices used will be as low as possible and exclude any charge for research and development. Non-nuclear-weapon States Party to the Treaty shall be able to obtain such benefits, pursuant to a special international agreement or agreements, through an appropriate international body with adequate representation of non-nuclear-weapon States. Negotiations on this subject shall commence as soon as possible after the Treaty enters into force. Non-nuclear-weapon States Party to the Treaty so desiring may also obtain such benefits pursuant to bilateral agreements.

Article VI

Each of the Parties to the Treaty undertakes 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, and on a treaty on general and complete disarmament under strict and effective international control.

Article VII

Nothing in this Treaty affects the right of any group of States to conclude regional treaties in order to assure the total absence of nuclear weapons in their respective territories.

Article VIII

1. Any Party to the Treaty may propose amendments to this Treaty. The text of any proposed amendment shall be submitted to the Depositary Governments which shall circulate it to all Parties to the Treaty. Thereupon, if requested to do so by one-third or more of the Parties to the Treaty, the Depositary Governments shall convene a conference, to which they shall invite all the Parties to the Treaty, to consider such an amendment.
2. Any amendment to this Treaty must be approved by a majority of the votes of all the Parties to the Treaty, including the votes of all nuclear-weapon States Party to the Treaty and all other Parties which, on the date the amendment is circulated, are members of the Board of Governors of the

International Atomic Energy Agency. The amendment shall enter into force for each Party that deposits its instrument of ratification of the amendment upon the deposit of such instruments of ratification by a majority of all the Parties, including the instruments of ratification of all nuclear-weapon States Party to the Treaty and all other Parties which, on the date the amendment is circulated, are members of the Board of Governors of the International Atomic Energy Agency. Thereafter, it shall enter into force for any other Party upon the deposit of its instrument of ratification of the amendment.

3. Five years after the entry into force of this Treaty, a conference of Parties to the Treaty shall be held in Geneva, Switzerland, in order to review the operation of this Treaty with a view to assuring that the purposes of the Preamble and the provisions of the Treaty are being realised. At intervals of five years thereafter, a majority of the Parties to the Treaty may obtain, by submitting a proposal to this effect to the Depositary Governments, the convening of further conferences with the same objective of reviewing the operation of the Treaty.

Article IX

1. This Treaty shall be open to all States for signature. Any State which does not sign the Treaty before its entry into force in accordance with paragraph 3 of this Article may accede to it at any time.
2. This Treaty shall be subject to ratification by signatory States. Instruments of ratification and instruments of accession shall be deposited with the Governments of the United Kingdom of Great Britain and Northern Ireland, the Union of Soviet Socialist Republics and the United States of America, which are hereby designated the Depositary Governments.
3. This Treaty shall enter into force after its ratification by the States, the Governments of which are designated Depositaries of the Treaty, and forty other States signatory to this Treaty and the deposit of their instruments of ratification. For the purposes of this Treaty, a nuclear-weapon State is one which has manufactured and exploded a nuclear weapon or other nuclear explosive device prior to 1 January 1967.
4. For States whose instruments of ratification or accession are deposited subsequent to the entry into force of this Treaty, it shall enter into force on the date of the deposit of their instruments of ratification or accession.
5. The Depositary Governments shall promptly inform all signatory and acceding States of the date of each signature, the date of deposit of each instrument of ratification or of accession, the date of the entry into force of this Treaty, and the date of receipt of any requests for convening a conference or other notices.
6. This Treaty shall be registered by the Depositary Governments pursuant to Article 102 of the Charter of the United Nations.

Article X

1. Each Party shall in exercising its national sovereignty have the right to withdraw from the Treaty if it decides that extraordinary events, related to the subject matter of this Treaty, have jeopardized the supreme interests of its country. It shall give notice of such withdrawal to all other parties to the Treaty and to the United Nations Security Council three months in advance. Such notice shall include a statement of the extraordinary events it regards as having jeopardized its supreme interests.
2. Twenty-five years after the entry into force of the Treaty, a conference shall be convened to decide whether the Treaty shall continue in force indefinitely, or shall be extended for an additional fixed period or periods. This decision shall be taken by a majority of the Parties to the Treaty.

Article XI

This Treaty, the English, Russian, French, Spanish and Chinese texts of which are equally authentic, shall be deposited in the archives of the Depositary Governments. Duly certified copies of this Treaty shall be transmitted by the Depositary Governments to the Governments of the signatory and acceding States.

IN WITNESS WHEREOF the undersigned, duly authorized, have signed this Treaty.

DONE in triplicate, at the cities of London, Moscow and Washington, the first day of July, one thousand nine hundred and sixty-eight.

Note: On 11 May 1995, in accordance with article X, paragraph 2, the Review and Extension Conference of the Parties to the Treaty on the Nonproliferation of Nuclear Weapons decided that the Treaty should continue in force indefinitely (see decision 3).

The Nuclear Nonproliferation Treaty

Kelsey Davenport

Appendix B

Glossary of Terms

1997 Model Additional Protocol:

The 1997 Model Additional Protocol is a voluntary agreement between states and the International Atomic Energy Agency (IAEA) that supplements a Comprehensive Safeguards Agreement. The protocol empowers the IAEA to nuclear facilities throughout the state, even sites outside of a nuclear declaration if the agency has evidence of illicit nuclear activity. The additional protocol also strengthens the effectiveness and improves the efficiency of safeguards. Additional protocols are negotiated individually based on the Model Additional Protocol, known as INFCIRC/540 (Corrected). As of 2018, 134 states have additional protocols in place.

The Anti-Ballistic Missile (ABM) Treaty:

The ABM Treaty barred Washington and Moscow from deploying nationwide defenses against strategic ballistic missiles. The treaty, which was signed in May 1972 and entered into force in October 1972, originally permitted both countries to deploy two fixed, ground-based defense sites of 100 missile interceptors each. One site could protect the national capital, while the second could be used to guard an intercontinental ballistic missile (ICBM) field. In a protocol signed July 3, 1974, the two sides halved the number of permitted defenses. On December 13, 2001, President George W Bush announced that the

Atomic bomb:

United States would withdraw from the ABM Treaty, claiming that it prevented US development of defenses against possible terrorist or 'rogue-state' ballistic missile attacks.

An atomic bomb contains a fissile material core or 'pit', typically uranium-235 or Plutonium-239, that is compressed by a conventional explosive, or collided with another sub-critical fissile material, to reach critical mass and ignite a fission reaction. The US nuclear weapons dropped on Hiroshima and Nagasaki were atomic bombs. Each bomb utilized a different method to ignite the fission reactor. The gun-type design involves shooting a sub-critical mass into another sub-critical mass to create a critical mass and ignite a fission reaction. The bomb dropped on Hiroshima used the gun-type design. This design is easier to build, but less common in modern nuclear weapons. The bomb dropped on Nagasaki used the implosion design, in which a chemical explosion compresses the core to reach a critical mass and ignite the fission reaction. The efficiency of the nuclear reaction can be increased by addition thermonuclear fuel to the core or layered around the core. This type of bomb is referred to as a 'boosted' or 'layered' atomic bomb.

Hydrogen bomb:

A hydrogen bomb, or thermonuclear bomb, it is a two-stage weapon. In a hydrogen bomb, the primary begins when a chemical explosion initiates a fission reaction. The fission reaction compresses the fissile material and the hydrogen isotopes in the secondary, leading to nuclear fusion. The fusion reaction can create much more powerful explosive yields than atomic bombs.

Ballistic Missile:

Ballistic missiles follow a pre-determined flight path based on the trajectory of the Earth. After a rocket engine launches the missile, it travels on an unpowered ballistic trajectory determined by gravity. Ballistic missiles can be armed with conventional or nuclear warheads and launched from fixed silos or mobile platforms. Ballistic missiles can also be launched from submarines (SLBMs). Ballistic missiles are classified by range.

Tactical ballistic missiles: Range of less than 300 km

Comprehensive Safeguards Agreement (CSA):

Short-range ballistic missile (SRBM):
Range between 300 km and 1000 km
Medium-range ballistic missile (MRBM): Range between 1000 km and 3500 km
Intermediate-range ballistic missile (IRBM): Range between 3500 km and 5500 km
Intercontinental-ballistic missile (ICBM): Range greater than 5500 km

Comprehensive Test Ban Treaty (CTBT):

A CSA is negotiated between a state and the IAEA. It allows the IAEA to monitor all nuclear facilities and materials that are declared by the state, but does not give the agency authority to investigate undeclared sites (see 1997 Model Additional Protocol). The CSA is the nuclear Nonproliferation Treaty (NPT) standard of verification required by Article III of the treaty. The nuclear weapon states have all negotiated voluntary safeguards arrangements for select civil nuclear facilities. States that are not party to the NPT can also negotiate safeguards arrangements with the IAEA, these are known as limited INFCIRC/66-type agreements.

The CTBT is an international treaty that prohibits all nuclear explosions anywhere on Earth—underground, underwater, or in the atmosphere. The CTBT contains provisions for an international monitoring system, comprised of 337 facilities to verify compliance with the treaty, including seismic, hydroacoustic, infrasound, and radionuclide detection stations. The CTBT was negotiated between 1994 and 1996 and opened for signature on September 24, 1996, at the UN General Assembly in New York. As of 2018, 164 states have ratified the CTBT, but it has yet to enter into force. Entry into force requires a set list of 44 states to ratify the treaty and as of 2018, all but eight have completed ratification. The monitoring system is operational, despite the treaty not having entered into force.

Conference on Disarmament (CD):

The CD is a multilateral forum for negotiating arms control and disarmament treaties. The CD succeeded the Ten-Nation Committee on

	Disarmament and the Eighteen-Nation Committee on Disarmament, the fora where the NPT was negotiated. The body was renamed the CD in 1984 and is currently comprised of 65 member states. These states negotiated the CTBT and the Chemical Weapons Convention. The CD is not just limited to weapons of mass destruction-related topics. It also addresses conventional weapons.
Cruise missile:	A cruise missile is a guided missile that is powered during the entire flight by a propulsion system. By relying on propulsion rather than ballistic trajectories, a cruise missile is maneuverable and can travel at lower altitudes. Cruise missiles carry either conventional or nuclear payloads. Cruise missiles tend to be characterized by the launch platform (sea, air, ground) and by speed (subsonic, supersonic, hypersonic).
Dual-use item:	An item that has both civilian and military applications.
Enrichment:	Enrichment increases the percentage of the fissile isotope uranium-235 by separating it from uranium-238.
Final Document:	The Final Document is the product of a Nuclear Nonproliferation Treaty Review Conference and represents the consensus view of the states-parties. Not all Review Conferences manage to adopt a Final Document.
Fissile material:	Fissile material contains elements whose nuclei are able to undergo fission, or be split by neutrons. Uranium-233, uranium-235, and Plutonium-239 are all fissile materials. Fissile materials undergo fission more easily than other fissionable materials and are more desirable for most reactor types and essential for nuclear explosives. Uranium-235 and Plutonium-239 are both used in nuclear weapons.
Fissile material cutoff treaty (FMCT):	The FMCT has yet to be negotiated, but the concept is a treaty that would end the production of fissile material for weapons purposes and may or may not address existing stocks of fissile materials. Such a treaty is on the agenda for the Conference on Disarmament, but that body has yet to reach consensus agreement on how to move forward, primarily because of the disagreement over whether or not the treaty should address existing stockpiles.

Nonaligned Movement (NAM):

The NAM is a 120-member bloc of developing states. The NAM is the largest group of states in the Nuclear Nonproliferation Treaty context.

Gaseous Diffusion:

Gaseous diffusion is a method for enriching uranium that pumps uranium hexafluoride gas (UF_6) through hundreds of filters. Uranium-235 isotopes, being lighter, pass through the barriers more quickly than uranium-238. The uranium-235 is then withdrawn from the process. Gaseous diffusion was used by the United States and others to enrich uranium, but the technology has become obsolete and most plants have been shut down. It required significant amounts of electricity, and once gas centrifuges were developed, they were considered more efficient and effective for enriching uranium.

Gas-centrifuge:

Gas centrifuges are a method for enriching uranium, in which uranium hexafluoride gas (UF_6) is fed into connected centrifuges, known as cascades. In each centrifuge, the gas is rotated at high speeds, causing the heavier uranium-238 atoms to move toward the outer walls of the cylinder. The lighter uranium-235 atoms concentrate toward the center. The lighter uranium-235 is withdrawn from the centrifuge and fed into the next centrifuge. When the uranium-235 reaches the desired concentration, it is withdrawn from the process. Centrifuges have replaced gaseous diffusion as the predominant method for uranium enrichment.

Highly Enriched Uranium (HEU):

Uranium that has been processed to increase the proportion of the uranium-235 isotope to more than 20 percent. Weapons-grade uranium generally refers to uranium enriched to at least 90 percent, but material of far lower enrichment levels can be used to create a nuclear explosive device. In addition to nuclear weapons, HEU is used today in naval nuclear reactors. HEU was commonly used in research reactors, but many of these reactors have been shut down or converted to use LEU.

Intermediate-Range Nuclear Forces (INF):

The INF Treaty required the United States and the Soviet Union to eliminate and permanently forswear nuclear and conventional ground-launched ballistic and cruise missiles with ranges of 500 to 5500 kilometers. The 1987 treaty marked the first time the superpowers

International Atomic Energy Agency (IAEA):

had agreed to reduce their nuclear arsenals, eliminate an entire category of nuclear weapons, and utilize extensive on-site inspections for verification. As a result of the INF Treaty, the United States and the Soviet Union destroyed a total of 2692 short-, medium-, and intermediate-range missiles by the treaty's implementation deadline of June 1, 1991.

The IAEA is an international organization based in Vienna charged with monitoring and safeguarding nuclear material and facilities to ensure that nuclear programs in non-nuclear weapons states remain peaceful. The IAEA's safeguards role pre-dated the NPT, but article III of the treaty required non-nuclear weapon states to negotiate a safeguards agreement with the agency. The IAEA also helps states pursue peaceful nuclear programs through technical cooperation and provides nuclear safety and security assistance. The IAEA was set up in 1957 within the UN structure after US President Dwight Eisenhower gave his Atoms for Peace speech.

Low-enriched uranium (LEU):

LEU is uranium that has been processed to increase the proportion of the uranium-235 isotope between 0.7 and 20 percent. Modern power reactors and research reactors typically run on LEU. LEU is not considered usable for nuclear weapons.

Multilateral Force (MLF):

The MLF was a US proposal for deploying nuclear weapons in Europe under mixed nationality NATO crews. The MLF nuclear-sharing concept was designed in response to states within NATO that wanted to be more involved in the organization's nuclear deterrent. The MLF proposal underwent several iterations in the 1960s, but was ultimately abandoned, as the Soviet Union objected to the MLF and it had become an obstacle to NPT negotiations.

North Atlantic Treaty Organization (NATO):

NATO is a political and military alliance founded in 1949, originally to provide collective defense to counter the Soviet Union and promote democratic values. NATO is currently comprised of 29 member states from Europe and North America. NATO's founding treaty includes a collective defense clause and nuclear weapons are a component of the organization's deterrence and defense capabilities. The nuclear deterrent is comprised of US nuclear weapons

stationed in several NATO countries. NATO's Nuclear Planning Group is in charge of NATO's nuclear policy and related issues, including arms control and nonproliferation. All NATO members except France participate in the Nuclear Planning Group.

Nuclear Nonproliferation Treaty (NPT):

The NPT is the cornerstone of nonproliferation and disarmament efforts. Under the NPT, states possessing nuclear weapons (the five states that tested a nuclear device prior to 1967) committed not to transfer nuclear weapons and related technologies to non-nuclear weapons states, and non-nuclear weapons states committed not to pursue nuclear weapons. States also committed to pursue effective measures to end the arms race and negotiate a treaty on disarmament. The NPT also recognizes the right to pursue nuclear programs for peaceful purposes and includes provisions requiring non-nuclear weapons states to enter into safeguards agreements with the IAEA to ensure that civil nuclear programs remain peaceful. The NPT was finalized in 1968 and entered into force in 1970. As of 2018, there are 191 states party to the NPT.

NPT Preparatory Committee (PrepCom):

Each NPT Review Conference is preceded by PrepCom meetings in each of the three years prior to the conference. The PrepComs decide on procedural matters such as the agenda for the review conference and may also issue substantive recommendations.

NPT Review Conference (RevCon):

Review Conferences of the NPT are held every five years and offer the states-parties an opportunity to review and enhance the implementation of the treaty. If the states reach consensus on actions to strengthen the treaty, the RevCon produces a Final Document outline the agreed upon conclusions of the meeting.

Non-nuclear-weapon state:

As defined by the NPT, any state that did not detonate a nuclear explosive device prior to January 1, 1967.

Nuclear-weapon state:

As defined by NPT Article IX, a state that manufactured and exploded a nuclear weapon prior to January 1, 1967. Those states are China, France, Russia, the United Kingdom, and the United States.

New Strategic Arms Reduction Treaty (New START):

New START is a verifiable arms reduction treaty signed by US President Barack Obama

and Russian President Dmitry Medvedev on April 8, 2010, in Prague. Under the treaty, the United States and Russia are limited to 1550 warheads (warheads on deployed ICBMs and SLBMs count toward this limit and each deployed heavy bomber equipped for nuclear armaments counts as one warhead toward this limit); a combined limit of 800 deployed and nondeployed ICBM launchers, SLBM launchers, and heavy bombers equipped for nuclear armaments; and a separate limit of 700 deployed ICBMs, deployed SLBMs, and deployed heavy bombers equipped for nuclear armaments. The United States and Russia had to reach the agreed upon limits by February 2018. The treaty's verification regime includes on-site inspections and exhibitions, data exchanges and notifications related to strategic offensive arms and facilities covered by the treaty, and provisions to facilitate the use of national technical means for treaty monitoring. It also provides for the exchange of telemetry. The treaty's duration is 10 years, unless superseded by a subsequent agreement.

Reprocessing:

A chemical process whereby uranium and Plutonium may be extracted from used nuclear fuel. Reprocessing is the method used to separate out weapons-grade Plutonium.

Strategic Arms Limitation Talks (SALT):

SALT, begun in 1969 and concluded in 1972, had produced both the ABM Treaty, which limited strategic missile defenses and the Interim Agreement, an executive agreement that capped US and Soviet ICBMs and SLBMs. Under the Interim Agreement, both sides pledged not to construct new ICBM silos, not to increase the size of existing ICBM silos 'significantly', and capped the number of SLBM launch tubes and SLBM-carrying submarines. The agreement limited the United States to 1,054 ICBM silos and 656 SLBM launch tubes. The Soviet Union was limited to 1607 ICBM silos and 740 SLBM launch tubes. The agreement did not address bombers or total deployed warheads

Strategic Arms Limitation Talks II (SALT II):

SALT II, signed in June 1979, built of all SALT. SALT II limited US and Soviet ICBM, SLBM, and strategic bomber-based nuclear forces to 2250 delivery vehicles and

placed a variety of other restrictions on deployed strategic nuclear forces. The agreement required the Soviets to reduce their forces by roughly 270 delivery vehicles/ US forces were below the limits and could actually have been increased. President Jimmy Carter asked the Senate not to consider SALT II for its advice and consent after the Soviet Union invaded Afghanistan in December 1979, and the treaty was not taken up again. Both Washington and Moscow subsequently pledged to adhere to the agreement's terms despite its failure to enter into force. However, on May 26, 1986, President Ronald Reagan said that future decisions on strategic nuclear forces would be based on the threat posed by Soviet forces and not SALT II limits.

START, signed in 1991, limited the United States and Russia to no more than 6000 strategic warheads on 1600 delivery vehicles. The treaty contained extensive counting rules and verification procedures. It expired Dec. 5, 2009.

START II was signed in January 1993, and called for reducing deployed strategic arsenals to 3000–3500 warheads and banned the deployment of multiple-warhead land-based missiles. START II would have required the destruction of excess delivery vehicles. The agreement's original implementation deadline was January 2003, ten years after signature, but a 1997 protocol moved this deadline to December 2007 because of the extended delay in ratification. Both the US Senate and the Russian Duma approved START II, but the treaty did not take effect because the Senate did not ratify the 1997 protocol and several ABM Treaty amendments, whose passage the Duma established as a condition for START II's entry into force.

Signed in 2002, SORT limits the United States and Russia to 1700 to 2200 operationally deployed strategic nuclear warheads by Dec. 31, 2012, the day the treaty expires. The treaty does not contain counting rules or verification procedures.

Nuclear weapons typically deployed on shorter-range delivery systems intended for use on the battlefield.

Strategic Arms Reduction Treaty (START):

Strategic Arms Reduction Treaty II (START II):

Strategic Offensive Reductions Treaty (SORT):

Tactical nuclear weapons:

UN General Assembly First Committee on Disarmament and International Security:

A subsidiary of the UN General Assembly responsible for drafting resolutions on disarmament issues. The First Committee meets every year in October for 4 to 5 weeks after the UN General Assembly General Debate. All UN member states can attend.

Treaty of Bangkok (Southeast Asia Nuclear-Weapon-Free Zone Treaty):

A treaty that prohibits the development, manufacture, acquisition, and testing of nuclear weapons anywhere within the region of the 10 full-member parties: Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam. It also prohibits the transport of nuclear weapons through the region. Signatories undertake to enact International Atomic Energy Agency safeguards and to refrain from dumping at sea, discharging into the atmosphere, or burying on land any radioactive material or waste. Opened for signature in December 1995, the treaty entered into force in March 1997. All 10 states-parties have ratified the treaty.

Treaty of Pelindaba (African Nuclear-Weapon-Free Zone Treaty):

A treaty that prohibits the research, development, manufacturing, stockpiling, acquisition, testing, possession, control, and stationing of nuclear explosive devices in the members' territory. The treaty also prohibits the deposit of radioactive waste originating from outside the continent within the region. Under the treaty, signatories are required to put all their nuclear programs under IAEA safeguards. The treaty provides for the establishment of the African Commission on Nuclear Energy, which will supervise treaty implementation and ensure compliance. The treaty was opened for signature in Cairo in April 1996 and entered into force in July 2009. As of 2018, 40 of the continent's 53 states are party to the treaty.

Treaty of Rarotonga (South Pacific Nuclear- Weapon-Free Zone Treaty):

A treaty that prohibits the testing, manufacturing, acquiring, and stationing of nuclear explosive devices in any member's territory. The treaty prohibits dumping radioactive wastes into the sea. In addition, the treaty requires all parties to apply IAEA safeguards to all their peaceful nuclear activities. It was opened for signature on August 6, 1985, and entered into force on December 11, 1986. Thirteen states have ratified the treaty.

Treaty of Semipalatinsk (Central Asian Nuclear-Weapon-Free Zone Treaty):

In force since March 21, 2009, the treaty is the first such zone in the Northern Hemisphere. It forbids the development, manufacture, stockpiling, acquisition, or possession of any nuclear explosive device within the zone. The treaty is the first to explicitly oblige state parties to implement an additional protocol in addition to the required IAEA safeguards agreement under the NPT. The treaty encompasses an environmental component that addresses concerns unique to the Central Asian region. Five countries (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan) are parties to the treaty.

Treaty of Tlatelolco (Nuclear-Weapon-Free Zone Treaty in Latin America and the Caribbean):

A treaty that created a nuclear-weapon-free zone in Latin America and the Caribbean and was the first international agreement aimed at excluding nuclear weapons from an inhabited region of the globe. In addition to prohibiting nuclear testing by all states-parties, member states accept the application of IAEA safeguards for all their nuclear activities to assist in verifying compliance with the treaty. The treaty establishes a regional organization, the Agency for the Prohibition of Nuclear Weapons in Latin America, to help ensure compliance with its provisions. The treaty was opened for signature on February 14, 1967, and entered into force on April 25, 1969. It has since been signed and ratified by all 33 states in Latin America and the Caribbean.

Weapons-grade enriched uranium:

Weapons-grade enriched uranium that has been processed to increase the proportion of the uranium-235 isotope to more than 90 percent, although explosive devices can be made with uranium enriched to lower levels.

Warsaw Pact:

The Warsaw Pact established a collective defense arrangement between the Soviet Union and seven states in eastern Europe. The Warsaw Pact was established in 1955 in response to the NATO, a military and political alliance of western European and north Atlantic states. The treaty establishing the Warsaw Pact allowed for the Soviet Union to station troops in the territories of the other participating states. The Warsaw Pact dissolved in 1991 with the collapse of the Soviet Union.