
The Treaty on the Prohibition of Nuclear Weapons and the Safeguards Standard

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Introduction

The elimination of nuclear weapons requires both *disarmament*—that states with nuclear weapons withdraw these weapons from service and destroy them—and *non-proliferation*—that no states, whether those that have disarmed or potential nuclear newcomers, acquire nuclear weapons. Rigorous verification is essential to ensure that both disarmament and non-proliferation objectives are sustained.

Verification of non-proliferation obligations pursuant to the Nuclear Non-Proliferation Treaty (NPT) is undertaken by the International Atomic Energy Agency (IAEA) through its safeguards system. The issue of safeguards standards relates to two situations: (a) the standard needed to support the non-proliferation regime while working toward nuclear disarmament and (b) the standard needed to maintain a nuclear-weapon-free world when disarmament is achieved, at which time all states will be non-nuclear-weapon states.

While today most attention is on situation (a), situation (b) could be even more challenging. In a nuclear-weapon-free world, the temptation for some states to pursue nuclear weapons could actually be greater than today: a relatively minor state might aspire to become a superpower. Successive NPT review conferences have recognized that nuclear disarmament will require rigorous and universal safeguards, specifically, the IAEA's strengthened safeguards system, which currently is based on a comprehensive safeguards agreement supplemented by an additional protocol.

When the Treaty on the Prohibition of Nuclear Weapons (TPNW) was negotiated, we would have expected the treaty to recognize the fundamental importance of rigorous verification to the treaty's objectives by

ensuring all parties would have the strongest form of IAEA safeguards. It is surprising, therefore, that the TPNW does not do this. Instead, it provides for two different safeguards standards:

- (a) States that had nuclear weapons, when they disarm, are required to have, in effect, a comprehensive safeguards agreement and an additional protocol.
- (b) All other parties are required only to maintain the safeguards obligations they had when the TPNW entered into force, on January 22, 2021. States that did not have an additional protocol on that date are not required to conclude one.

This differentiation is counterproductive to the TPNW's own objectives and is unhelpful to efforts under the NPT to universalize the additional protocol.

This paper discusses what TPNW parties can do to rectify this situation.

Why the IAEA's Additional Protocol Is so Important

The NPT requires non-nuclear-weapon states to accept IAEA safeguards on *all* their nuclear material—what is termed comprehensive safeguards, applied through a comprehensive safeguards agreement concluded with the IAEA. In the 1970s and 1980s the IAEA safeguards system was developed with a focus on declared nuclear activities—what came to be termed the *correctness* of states' declarations. At that time, the IAEA did not have capabilities for detecting undeclared nuclear activities, and it was assumed a wholly secret nuclear program would be beyond the capacity of most states.

The discovery of Iraq's nuclear weapon program in 1991 highlighted the need for the IAEA to establish the legal authority and technical means to detect undeclared nuclear activities—to be able to verify *completeness*, namely, that *all* of a state's nuclear material and activities are under safeguards. For the last 30 years, the IAEA and member states have been working to strengthen the safeguards system, especially to address the challenge of undeclared nuclear activities.

The legal basis for much of the safeguards strengthening measures is the IAEA's additional protocol. The additional protocol was developed to overcome shortcomings in the comprehensive safeguards agreement by broadening the information to be provided to the IAEA and the access available to IAEA inspectors. The Model Additional Protocol was approved by the IAEA Board of Governors in 1997, and states were asked to supplement their comprehensive safeguards agreements by concluding an additional protocol.

The IAEA is working with member states to universalize the additional protocol. The relationship between the NPT, IAEA safeguards, and the additional protocol is very clear:

- The NPT requires each non-nuclear-weapon state to accept IAEA safeguards on all its nuclear material.
- The NPT gives the IAEA the responsibility for verifying this.

- The IAEA stresses that it is unable to provide assurance that safeguards are applied to all the nuclear material in the state—that is, the state has no undeclared nuclear materials and activities—unless an additional protocol is being implemented.
- Thus, performance of a fundamental provision of the NPT is dependent on the state having an additional protocol.

The IAEA has emphasized that

it is only in countries with both a comprehensive safeguards agreement and an additional protocol in force that the IAEA has sufficient information and access to provide credible assurances to the international community of both the non-diversion of nuclear material and the absence of undeclared nuclear material and activities.¹

As at September 15, 2021,² 137 states, including 131 non-nuclear-weapon states, had additional protocols in force. A further 14 non-nuclear-weapon states have signed additional protocols. Of the 64 non-nuclear-weapon states that currently have nuclear facilities, 54 (that is, 84 percent) have an additional protocol in force. Four more³ have signed additional protocols but have not yet ratified them. This makes a total of over 90 percent of non-nuclear-weapon states with nuclear facilities that have concluded or at least signed an additional protocol.

Thus, as a matter of international practice, the combination of a comprehensive safeguards agreement and an additional protocol now represents the contemporary NPT safeguards standard. However, there are six non-nuclear-weapon states with nuclear facilities⁴ that have not yet accepted the additional protocol and therefore remain outside the strengthened safeguards system.

Some states⁵ argue that the additional protocol is voluntary and say they will not conclude a protocol until the nuclear-weapon states meet their NPT disarmament obligations. However, it is misguided to present acceptance of the additional protocol as a political or legal issue. The purpose of safeguards is to provide confidence of a state's commitment against acquiring nuclear weapons and to ensure timely detection of diversion of nuclear material to nuclear weapons if such a diversion occurs. It is notable that none of the safeguards non-compliance cases reported by the IAEA to date have involved states with an additional protocol. Where a state refuses to accept the most effective form of safeguards, this inevitably raises concerns about the genuineness of that state's commitment to non-proliferation.⁶

¹ IAEA, "Nuclear Safeguards Conclusions Presented in 2016 Safeguards Implementation Report," June 16, 2017, www.iaea.org/newscenter/news/nuclear-safeguards-conclusions-presented-in-2016-safeguards-implementation-report.

² At the time of writing, the IAEA status report of September 15, 2021, was the most recent one available: www.iaea.org/sites/default/files/20/01/sg-ap-status.pdf.

³ Algeria, Belarus, Iran, and Malaysia. Iran was implementing its additional protocol "provisionally" but suspended this in response to the US renouncing the Joint Comprehensive Plan of Action.

⁴ Argentina, Brazil, Egypt, Saudi Arabia, Syria, and Venezuela. Saudi Arabia is included here as a state with nuclear facilities because it has a research reactor that was reportedly nearing completion in 2019. No further information is available on the status of this facility.

⁵ For example, Brazil and Egypt.

⁶ See John Carlson, "Is the Additional Protocol 'Optional'?", VERTIC, *Trust and Verify*, No. 132 (January-March 2011), pp. 6–9, www.vertic.org/media/assets/TV/TV132.pdf.

TPNW Safeguards Provisions

The TPNW does not refer to the additional protocol by name, but it does so by description. Article 4.3 provides that states that have nuclear weapons shall conclude, and bring into effect upon elimination of their nuclear weapons,

a safeguards agreement with the International Atomic Energy Agency sufficient to provide credible assurance of the non-diversion of declared nuclear material from peaceful nuclear activities and of the absence of undeclared nuclear material or activities in the State as a whole.

This formulation corresponds to the formulation used by the IAEA to describe the combination of a comprehensive safeguards agreement and an additional protocol

For other states (effectively, non-nuclear-weapon states), Article 3.1 requires only that the state shall

at a minimum, maintain its International Atomic Energy Agency safeguards obligations in force at the time of entry into force of this Treaty, without prejudice to any additional relevant instruments that it may adopt in the future.

The effect is that non-nuclear-weapon states that did not have an additional protocol on the date of the TPNW's entry into force are not required to conclude one. Thus, the TPNW provides for two different safeguards standards.

TPNW proponents argue that Article 3.1 does not preclude parties from concluding additional protocols in the future. This argument is disingenuous: a treaty that seeks to provide assurance in support of international peace and security needs to establish legally binding commitments; reliance on good faith does not provide the necessary assurance.

Differentiation of safeguards standards cannot be justified in terms of the TPNW's objectives. It seems that this part of the text was the outcome of a contest between states that sought to require the additional protocol and a minority, clearly influential, that was opposed to doing this.

The TPNW was not intended to be a verification treaty, and it would have been better if it had avoided specific verification provisions, rather than ending up with the current unsatisfactory text. This could have been avoided by expressing a commitment to rigorous verification in more general terms. In addition, the TPNW might have expressly preserved existing treaty obligations. Instead, the TPNW sets out verification requirements that are potentially inconsistent with the NPT. The concern here is whether states without an additional protocol could exploit the TPNW provisions to claim they do not have to conclude an additional protocol in order to meet their NPT commitments.⁷ The TPNW's provision on the relationship with other agreements (Article 18) is not helpful, referring to consistency, a notion that is open to differing interpretations.⁸

⁷ See John Carlson, "The nuclear weapon prohibition treaty—a safeguards debacle," VERTIC, *Trust & Verify*, No. 158 (Autumn 2018), pp. 1–6, www.vertic.org/media/assets/TV/TV158.pdf.

⁸ Under Article 18, "The implementation of this Treaty shall not prejudice obligations undertaken by States Parties with regard to existing international agreements, to which they are party, where those obligations are consistent with the Treaty."

What Can Be Done

Because the TPNW has some parties that have not concluded an additional protocol, the IAEA is not able to provide adequate assurance of the absence of undeclared nuclear material and activities in those states. The most satisfactory solution is for the TPNW parties to amend the treaty to remove the problematic provisions. Given that the TPNW has only recently entered into force, it is most unlikely the parties will be prepared to do this, at least at this stage. As an alternative, those parties currently without an additional protocol could proceed to conclude one. By so doing, these states could reassure the other parties, and the wider international community, of their commitment to non-proliferation.

As of November 8, 2021,⁹ the TPNW had 56 parties, and an additional 32 signatories. Of the parties, 37 have an additional protocol in force, and 19 do not. Of the signatories, 19 have an additional protocol in force, and 13 do not. These figures are shown in the following table. More detail can be seen in the Annex to this paper.

	States with nuclear facilities and an AP	States with nuclear facilities and no AP	States with no nuclear facilities and with an AP	States with no nuclear facilities and no AP
TPNW parties	11	2	26	17
TPNW signatories	6	2	13	11

Most significant, in terms of nuclear capabilities, are the states that currently have nuclear facilities. Of these, there are two parties without an additional protocol: Malaysia (which has signed its additional protocol but not yet ratified it) and Venezuela. There are also two signatories with nuclear facilities but no additional protocol: Algeria (which has signed but not yet ratified its additional protocol) and Brazil. It would certainly help the credibility of the TPNW if these four states were to conclude additional protocols. For Algeria and Malaysia, this should not be an issue as they have already signed. Brazil and Venezuela should reflect on the international interest, the benefits to both the NPT and the TPNW, and the national benefit if they were to join the great majority of states with nuclear activities that have accepted the additional protocol.

Among the parties that currently have no nuclear facilities, 26 have an additional protocol, and 17 do not. For signatories, the numbers are 13 with an additional protocol and 11 without. For those without additional protocols and also without nuclear activities, the situation is not of as much concern as the cases of those with nuclear activities. Nonetheless, the cause of both the TPNW and the NPT would benefit from the highest possible uptake of additional protocols, and these states therefore should also act to conclude additional protocols.

Another group is the one comprising states that voted to adopt the TPNW in 2017 but have not yet signed it. There are four such states with nuclear facilities and without additional protocols: Argentina, Egypt, Iran, and Saudi Arabia. It is to be hoped these states conclude additional protocols (or in Iran's case, return to its additional protocol) before they join the TPNW. In the group of states without nuclear facilities, those without an additional protocol (19) slightly outnumber those with an additional protocol (17). The states without an additional protocol should be encouraged and assisted to conclude one.

⁹ The TPNW's status is at treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVI-9&chapter=26&clang=en, accessed on November 8, 2021. [NTI: Do you include access dates?]

Conclusion

The TPNW's differentiation of safeguards standards cannot be justified in terms of the treaty's objectives. Rather, this appears to be collateral damage from argumentation within the NPT membership being carried into the TPNW negotiations. It is not in the interest of either the TPNW or the NPT to maintain this differentiation. The most practical solution is for parties to the TPNW that do not have an additional protocol in force to conclude one as soon as possible and for the other parties to do all they can to encourage and assist this. Likewise, in the contexts of the NPT and the IAEA, states that continue to refuse to adopt the additional protocol are acting contrary to the non-proliferation assurance that the NPT and IAEA safeguards are intended to provide. The great majority that have additional protocols must do all they can to persuade the remaining holdouts that the additional protocol is essential both to maintaining a strong and effective non-proliferation regime and to achieving nuclear disarmament.

About the Author

John Carlson advises NTI leadership on international nuclear security, safeguards and verification, and management of the nuclear fuel cycle. He supports NTI's efforts in the Asia-Pacific region on nuclear security and arms reduction and is a member and Senior Associate Fellow of the Asia Pacific Leadership Network. Carlson is a Nonresident Senior Fellow at the Vienna Center for Disarmament and Nonproliferation, a member of the Advisory Council of the International Luxembourg Forum, a member of VERTIC's International Verification Consultants Network, and a Fellow of the Institute of Nuclear Materials Management. Carlson was an official in the Australian government for more than four decades.

Annex

The Treaty on the Prohibition of Nuclear Weapons (TPNW) and the Additional Protocol (AP) – Current Status*

1. States that have ratified the TPNW: Total 56

A. With nuclear facilities and an Additional Protocol (AP) in force: Total 11

Austria	Jamaica	Nigeria	Thailand
Bangladesh	Kazakhstan	Philippines	Vietnam
Chile	Mexico	South Africa	

B. With nuclear facilities and no AP in force: Total 2

Malaysia**	Venezuela
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C. Without nuclear facilities and with an AP in force: Total 26

Antigua & Barbuda	Ecuador	Lesotho	Paraguay
Benin	El Salvador	Malta	St. Kitts & Nevis
Botswana	Fiji	Namibia	Seychelles
Cambodia	Gambia	New Zealand	Uruguay
Comoros	Holy See	Nicaragua	Vanuatu
Costa Rica	Honduras	Palau	
Cuba	Ireland	Panama	

D. Without nuclear facilities and no AP in force: Total 17

Belize	Kiribati**	Palestinian Territories	St. Vincent & Grenadines
Bolivia**	Laos**	Samoa	Trinidad & Tobago
Cook Islands	Maldives	San Marino	Tuvalu
Dominica	Nauru	Saint Lucia	
Guyana	Niue		

* TPNW status as of November 8, 2021; AP status as of September 15, 2021.

** States that have signed but not yet ratified an AP.

2. States that have signed but not yet ratified the TPNW: Total 32

A. With nuclear facilities and an AP in force: Total 6

Colombia	Ghana	Libya
Democratic Republic of the Congo	Indonesia	Peru

B. With nuclear facilities and no AP in force: Total 2

Algeria**	Brazil
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C. Without nuclear facilities and with an AP in force: Total 13

Angola	Côte d'Ivoire	Madagascar	Tanzania
Central African Republic	Dominican Republic	Malawi	Togo
Congo	Guatemala	Mozambique	
	Liechtenstein	Niger	

D. Without nuclear facilities and no AP in force: Total 11

Brunei	Guinea-Bissau**	Sao Tome & Principe	Zambia**
Cabo Verde**	Myanmar**	Sudan	Zimbabwe
Grenada	Nepal	Timor-Leste**	

* TPNW status as of November 8, 2021; AP status as of September 15, 2021.

** States that have signed but not yet ratified an AP.