

2020 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons

7 July 2022
English
Original: English and French

New York, 1–26 August 2022

Nuclear disarmament verification

Working paper submitted by France and Germany

A joint commitment in favour of nuclear disarmament verification

1. As parties to the Treaty on the Non-Proliferation of Nuclear Weapons, France and Germany share the ultimate goal of achieving a world free of nuclear weapons and general and complete disarmament “under strict and effective international control” as enshrined in article VI of the Treaty.
2. While a “treaty on general and complete disarmament” (article VI, Non-Proliferation Treaty) can only be achieved when the strategic environment is conducive, both our countries consider its verifiability and verification a key element. Article VI recalls that obligations under such a treaty would have to be subject to “strict and international control”. More generally, effective verification of arms control treaties and arrangements is essential to ensure full compliance and build trust between parties. A disarmament treaty is worth nothing if it cannot be thoroughly verified.
3. France and Germany consider that, while verification is not an end in itself, work on nuclear disarmament verification is a valuable contribution to efforts made under article VI of the Non-Proliferation Treaty. Verification regimes will necessarily have to relate to a specific treaty, the negotiations of which would take place when the international context allows. Nevertheless, the current context should not prevent us from advancing discussions on nuclear disarmament verification, which will eventually facilitate the work of future negotiators. Also, however crucial it may be to develop international nuclear disarmament verification at a multilateral level, bilateral and unilateral transparency and disarmament measures must not be forgotten or underestimated.
4. In order to contribute to the multilateral effort on nuclear disarmament verification, our countries have been actively involved in specific forums over the past few years (see below), and have decided to organize a practical exercise to advance common knowledge and understanding in this domain.

International Partnership for Nuclear Disarmament Verification

5. France and Germany have been involved in the International Partnership for Nuclear Disarmament Verification since 2015. This forum, which has brought together 30 States since 2015, seeks to identify the technical challenges and issues



linked to nuclear disarmament verification, including those related to security, and to develop potential procedures and technologies to address those challenges. It allows for technical dialogue to take place between non-nuclear-weapon States and nuclear-weapon States on nuclear disarmament verification and to build a common knowledge and understanding of this issue.

Group of Governmental Experts

6. At the seventy-first session of the United Nations General Assembly, France and Germany voted in favour of resolution 71/67 on “nuclear disarmament verification”, which established a Group of Governmental Experts tasked with considering the role of verification in advancing nuclear disarmament. France and Germany actively participated in this Group, which concluded with a consensual report, recommending the continuation of work and setting out possible avenues of action for the future.

7. At the seventy-fourth session of the United Nations General Assembly, France and Germany voted in favour of resolution 74/50 establishing a new Group of Governmental Experts tasked with the further consideration of nuclear disarmament verification issues. Both countries have actively engaged in the Group’s work, which was started in February 2022 and which will continue until 2023.

Framework and objectives of the Franco-German nuclear disarmament verification exercise (NuDiVe)

8. Two NuDiVe exercises took place in September 2019 and in April 2022 at Forschungszentrum Jülich (Germany). NuDiVe is an initiative jointly led by Germany and France within the framework of our respective national involvements in the International Partnership for Nuclear Disarmament Verification. The exercise was, however, open for multilateral participation of both nuclear-weapon and non-nuclear-weapon States involved in the International Partnership for Nuclear Disarmament Verification initiative. Experts from a total of 13 countries coming from both groups of countries participated in the exercise in 2019, and 11 in 2022.

9. NuDiVe benefited from the experience of other international initiatives of nuclear disarmament verification – in particular previous work and exercises of the United Kingdom-Norway Initiative and the Quad Nuclear Verification Partnership (Norway, Sweden, United Kingdom, United States). Building on these previous experiences, the NuDiVe exercise was designed to address some issues that were still to be explored further in the field of verification.

10. NuDiVe was the first multilateral nuclear disarmament verification exercise focused on a particularly sensitive process of nuclear disarmament verification, the dismantlement of a nuclear weapon. In both 2019 and 2022, the exercises sought to simulate inspection procedures so as to ensure that nuclear materials were not being diverted during the dismantlement of a nuclear warhead, which has to be conducted behind closed doors, without inspectors’ presence, pursuant to non-proliferation obligations and national security constraints. This phase of dismantlement is indeed particularly sensitive, as the chain of custody of a declared item must be broken temporarily and be re-established afterwards. At the same time, this must be done in a way that does not hamper confidence in the disarmament process.

11. The NuDiVe exercises thus focused on the procedures and application of relevant technologies that provide sufficient confidence about the absence of diversion of nuclear materials during the dismantlement operation of a nuclear warhead within a treaty-related verification regime. Both exercises followed the scheme of a potential multilateral verification treaty, and consequently took into account necessary obligations related to the protection of proliferation-sensitive information and national security imperatives.

12. While we hope that the work done in NuDiVe and in the International Partnership for Nuclear Disarmament Verification more generally will facilitate negotiators' work in the future for a thoroughly verifiable disarmament treaty, this exercise is not intended to create a model for multilateral verification of nuclear disarmament. Any verification of a treaty or international arrangement will result from the negotiations of the instrument in question and will have to be agreed by the parties.

NuDiVe exercise organization and key features

13. NuDiVe 2019 and 2022 focused on simulating the inspection procedures to ensure the non-diversion of fissile material during the dismantlement of a – fictional – nuclear warhead:

- Participants were separated into three teams: a team of inspectors, a team from the host national country, and a team of evaluators, in charge of assessing the exercise itself.
- Because of nuclear safety and security imperatives, and in order to guarantee the feasibility of the exercise, the special nuclear material and other material were simulated with proxies: surrogate radioisotopes with similar gamma and neutron intensity of 50 grams of plutonium.
- Inspectors were kept under visual monitoring all the time by the host team and were not allowed to enter the dismantlement area without a special equipment (Tyvek suit) to avoid any voluntary or involuntary swiping of nuclear particles.
- Transportation of the item in and out of the dismantlement room was monitored using a portal monitor (detecting neutron and gamma radiation) and inspector presence (visual observation), as well as video surveillance by closed circuit television. NuDiVe 2022 presented several evolutions compared with 2019: use of new and more advanced technologies and integration of new corresponding procedures; slightly revised scenario with the assumption that previous inspections had taken place; and presence of technical teams to support the work of the host country.
- The dismantlement room was the primary focus for the inspector team during the exercise. Inspectors applied seals on possible diversion pathways, and used gamma and neutron detectors, as well as a gamma-ray imager, before and after dismantlement, in order to ensure non-diversion of nuclear material during the dismantlement operations, which were held behind closed doors for non-proliferation purposes.

Participants' involvement and feedback

14. The two NuDiVe exercises brought together experts from all over the world (Australia, Canada, Germany, France, Hungary, Japan, the Netherlands, Poland, the Republic of Korea, Sweden, Switzerland, the United Kingdom and the United States). In addition to the conclusions drawn by the members of the inspection and hosting teams, the team of evaluators provided a detailed evaluation report highlighting the strengths of the exercise and identifying areas for improvement. The success of the NuDiVe exercises and its findings should promote greater multilateral involvement in nuclear disarmament verification and provide a deeper understanding and food for thought for future work on the issue.

15. For further information, see www.ipndv.org/reports-analysis/nudive-exercise-full-documentation.