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**General and complete disarmament:
nuclear disarmament verification**

Group of Governmental Experts to consider the role of verification in advancing nuclear disarmament

Note by the Secretary-General

The Secretary-General has the honour to transmit herewith the report of the Group of Governmental Experts to consider the role of verification in advancing nuclear disarmament established pursuant to paragraph 7 of General Assembly resolution [71/67](#).

* [A/74/50](#).



Final report of the Group of Governmental Experts to consider the role of verification in advancing nuclear disarmament

Summary

The present report of the Group of Governmental Experts to consider the role of verification in advancing nuclear disarmament, established pursuant to General Assembly resolution 71/67, provides an overview of the discussions held by the Group, presents general observations on verification experiences and addresses issues of institutional set-up, support structures and capacity-building.

The report also contains a section on identification of possible points of convergence, in which the Group of Governmental Experts addressed the concept of the role of verification in advancing nuclear disarmament and suggested a list of principles on verification in advancing nuclear disarmament.

The Experts participating in the Group concluded, inter alia, that advancing nuclear disarmament is an ongoing undertaking and there is a need for a continued international examination of the issue in all its aspects, including verification.

The Group of Governmental Experts recommended that States Members of the United Nations, as well as relevant parts of the international disarmament machinery, in accordance with their respective mandates, consider this report. The Group also recommended to consider further work related to the role of verification in advancing nuclear disarmament, taking into account the report of the Group of Governmental Experts.

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Foreword by the Secretary-General

The Group of Governmental Experts to consider the role of verification in advancing nuclear disarmament, established by the General Assembly in its resolution [71/67](#), met in Geneva for three sessions of one week each in 2018 and 2019.

As mandated by the General Assembly of the United Nations, the Group of Governmental Experts, during its meetings, considered the role of verification in advancing nuclear disarmament. In this regard, the Group also took into account the views of Member States on the development and strengthening of practical and effective nuclear disarmament verification measures and on the importance of such measures in achieving and maintaining a world without nuclear weapons. Those were conveyed to me and are contained in document [A/72/304](#).

I welcome that the Group of Governmental Experts sought to identify possible points of convergence and suggested a list of principles to inform further work of the role of verification in advancing nuclear disarmament.

States Members of the United Nations and relevant international disarmament bodies are advised to heed the recommendations made by the Group of Governmental Experts in considering the role of verification towards advancing nuclear disarmament. I also encourage States to give further attention to this subject to build on the important ground laid by the Group in its report.

I take this opportunity to thank the Chair, Ambassador Knut Langeland of Norway, and all the Experts for their work.

Letter of transmittal

I have the honour to submit herewith the report of the Group of Governmental Experts to consider the role of verification in advancing nuclear disarmament. The Group, which you appointed pursuant to paragraph 7 of General Assembly resolution [71/67](#), comprised the following Experts selected on the basis of equitable geographical representation:

Djamel Moktefi (Algeria)

Director of Legal Affairs, Ministry of Foreign Affairs

María Jimena Schiaffino (Argentina)

Counsellor, Permanent Mission of Argentina to the United Nations Office and other international organizations in Geneva

Marcelo Câmara (Brazil)

Head of the Disarmament and Sensitive Technologies Division, Ministry of Foreign Affairs

Alfredo Labbé (Chile)

Ambassador (Ret.), Vice-President of the International Humanitarian Fact-Finding Commission

Wang Chang (China)

(First and second sessions)

Counsellor and Division Director, Nuclear Affairs Division, Department of Arms Control and Disarmament, Ministry of Foreign Affairs

Zhang Shen (China)

(Third session)

Counsellor, Department of Arms Control and Disarmament, Ministry of Foreign Affairs

Pasi Patokallio (Finland)

Ambassador (Ret.), Senior Adviser, Ministry of Foreign Affairs

Romain Le Floc'h (France)

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Louis Riquet (France)

Alternate Expert, Deputy Permanent Representative of France to the Conference on Disarmament

Michael Biontino (Germany)

Ambassador (Ret.), Adviser, Federal Foreign Office

György Molnár (Hungary)

Ambassador, Special Representative for Arms Control, Disarmament and Non-Proliferation

Pankaj Sharma (India)

Ambassador and Permanent Representative of India to the Conference on Disarmament

Clemens T. Bektisukuma (Indonesia)

(First session)

Permanent Mission of Indonesia to the United Nations Office and other international organizations in Geneva

Grata Werdaningtyas (Indonesia)

(Second session)

Director for International Security and Disarmament, Ministry of Foreign Affairs

Roy Martin Hasudungan (Indonesia)

(Third session)

Directorate of International Security and Disarmament, Directorate General of Multilateral Cooperation Affairs, Ministry of Foreign Affairs

Takeshi Nakane (Japan)

Special Assistant to the Minister for Foreign Affairs, Ambassador for Science and Technology Cooperation

Erlan Gadletovich Batyrbekov (Kazakhstan)

Director General of Republican State Enterprise, National Nuclear Centre of the Republic of Kazakhstan

Jaime Aguirre Gómez (Mexico)

(First session)

Deputy Director General for Environmental Radiological Surveillance, Physical Security and Safeguards of the National Commission of Nuclear Safety and Safeguards

Sandra Paola Ramírez Valenzuela (Mexico)

(Third session)

Deputy Director General for Disarmament, Non-Proliferation and Arms Control, Directorate General for the United Nations, Ministry of Foreign Affairs

Abdessamad Tajerramt (Morocco)

Head of the Division of International Organizations, Ministry of Foreign Affairs and International Cooperation

Tom Coppen (Netherlands)

Senior Policy Officer, Ministry of Foreign Affairs

Abiodun Richards Adejola (Nigeria)

Deputy Head of Mission, Embassy of Nigeria to Ethiopia and Permanent Mission to the African Union and the Economic Commission for Africa, Addis Ababa

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Ambassador, Royal Embassy of Norway, Algiers

Usman Jadoon (Pakistan)

Counsellor, Permanent Mission of Pakistan to the United Nations Office and other international organizations in Geneva

Damian Przenioslo (Poland)

Minister-Counsellor, Head of the Weapons of Mass Destruction Non-Proliferation and Disarmament Unit, Ministry of Foreign Affairs

Vladimir Leontiev (Russian Federation)

(First and second sessions)

Deputy Director of Department for Non-Proliferation and Arms Control, Ministry of Foreign Affairs

Alexander Deyneko (Russian Federation)

(Third session)

Alternate Expert, Deputy Representative, Permanent Mission of the Russian Federation to the United Nations Office and other international organizations in Geneva

Denis Davydov (Russian Federation)
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Johann Kellerman (South Africa)
 Director, Disarmament and Non-Proliferation, Department of International
 Relations and Cooperation

Benno Laggner (Switzerland)
 (First session)
 Ambassador, Resident Representative to the International Atomic Energy Agency,
 Permanent Representative to the Preparatory Commission for the Comprehensive
 Nuclear-Test-Ban Treaty Organization, Permanent Mission of Switzerland to the
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 Deputy Head Arms Control, Disarmament and Non-Proliferation Section, Division
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David Chambers (United Kingdom of Great Britain and Northern Ireland)
 Arms Control and Disarmament Research Unit, Foreign and Commonwealth Office

Michael Edinger (United States of America)
 Foreign Affairs Officer, Office of Multilateral and Nuclear Affairs, Bureau of Arms
 Control, Verification and Compliance, Department of State

I wish to extend my gratitude to all the Governmental Experts participating in
 the group for their readiness to engage in constructive discussions with a view to
 seeking common understanding.

I also wish to thank Silvia Mercogliano, Political Affairs Officer, who served as
 Secretary of the Group, as well as Annette Schaper and Wilfred Wan (United Nations
 Institute for Disarmament Research), who served as consultants, for the invaluable
 support provided.

The report was adopted by consensus by the Group. It is structured into four
 sections, where sections II, III and IV are the main substantive part. Section II is
 the descriptive part of the report, reflecting different views of the discussions in the
 Group – including proposals for follow up activities on nuclear disarmament
 verification. Section III describes possible points of convergence emerging from the
 group – including guiding principles for nuclear disarmament verification. Section IV
 outlines the conclusions and recommendations of the Group.

As mandated in paragraph 7 of resolution [71/67](#), in the conduct of its work the
 Group took into account the views of Member States on the development and
 strengthening of practical and effective nuclear disarmament verification measures
 and on the importance of such measures in achieving and maintaining a world without
 nuclear weapons, as contained in the report of the Secretary General of 8 August 2017
 ([A/72/304](#)).

On behalf of the Group of Governmental Experts, I am honoured to submit to
 you the present report, which was adopted unanimously on 12 April 2019.

(Signed) Knut **Langeland**
 Ambassador
 Royal Embassy of Norway
 Algiers

I. Introduction

1. In its resolution [71/67](#), the General Assembly requested the Secretary-General to establish a group of governmental experts of up to 25 participants on the basis of equitable geographical distribution to consider the role of verification in advancing nuclear disarmament, taking into account the report of the Secretary-General containing the views of Member States on the development and strengthening of practical and effective nuclear disarmament verification measures and on the importance of such measures in achieving and maintaining a world without nuclear weapons.¹

2. The Group of Governmental Experts was composed of representatives from: Algeria, Argentina, Brazil, Chile, China, Finland, France, Germany, Hungary, India, Indonesia, Japan, Kazakhstan, Mexico, Morocco, Netherlands, Nigeria, Norway, Pakistan, Poland, Russian Federation, South Africa, Switzerland, United Kingdom of Great Britain and Northern Ireland and United States of America. The Group, which operated by consensus, held three sessions in 2018 and 2019,² at the United Nations Office at Geneva, Switzerland.

3. The present report reflects the work of the Group conducted in accordance with the programmes of work agreed for each session. At its first session, the Group decided that it was necessary to consider what constitutes nuclear disarmament verification and principles for such verification, how it may be carried out and who could carry out such work. The Group examined concepts and had an in-depth exchange of views, in accordance with its mandate, on the role of verification in advancing nuclear disarmament. The discussions showed that members of the Group had diverse perspectives on the issues at hand. Yet, the deliberations facilitated convergences on a number of topics, which enabled the Group to derive some conclusions and make some recommendations.

II. Issues considered by the Group of Governmental Experts

A. General discussion

4. It was recognized that all States Members of the United Nations have a stake in achieving and maintaining a world without nuclear weapons. This has been underlined in a number of documents.³ The Group noted that there were different – and sometimes opposing – views on how to achieve a world without nuclear weapons; however, the Group considered the role of verification in advancing nuclear disarmament with a view to achieving and maintaining a world without nuclear weapons.

5. The Group emphasized that it was not within its mandate to create a specific verification regime. The Group noted that a nuclear disarmament verification regime must be linked to specific treaty obligations. A number of Experts stressed the importance of discussion on general verification aspects applicable to any treaty.

¹ The report of the Secretary-General, which was also mandated by resolution [71/67](#), is contained in [A/72/304](#).

² The first session took place from 14 to 18 May 2018, the second session from 12 to 16 November 2018 and the third session from 8 to 12 April 2019.

³ Including from the United Nations Disarmament Commission, and also the final document of the first special session of the General Assembly devoted to disarmament (1978) ([A/S-10/4](#)) and outcome documents of Review Conferences of the Treaty on the Non-Proliferation of Nuclear Weapons.

6. While there were different views on whether the current security environment is or is not conducive to progress in nuclear disarmament, a number of Experts argued that the work of the Group on nuclear disarmament verification might facilitate future nuclear disarmament processes. The Group observed that effective verification could contribute to trust and confidence. It was recognized that verification is essential at all stages of the nuclear disarmament process.

7. The Group discussed the challenges and possible risk related to nuclear disarmament verification activities. The Group also discussed how to strike a balance with legitimate sovereignty-, security-, safety- and proliferation-related concerns of the parties to an agreement. A number of Experts observed that in some cases it may not be conducive to bring in non-nuclear-weapon States. A number of Experts expressed the idea that this risk could be manageable.

8. A number of Experts asserted that work on nuclear disarmament verification may help to foster more inclusivity, including the engagement of non-nuclear-weapon States. In their view, this is necessary to develop broader trust and confidence. They stated that non-nuclear-weapon States have much insight to offer on verification in general, not least from their past acquired experience in other verification activities.

9. Verification in different contexts was considered by the Group. Experts discussed the balance between the principle of equal right to participate and different obligations in multilateral nuclear disarmament verification.

10. The Group explored the conceptual understanding of nuclear disarmament verification. Experts exchanged initial views on the scope of nuclear disarmament and possible verification measures. A number of Experts suggested that this can be delimited by stages related to the nuclear weapon life cycle, or by phases in the nuclear disarmament process, and presented a number of working papers. One working paper presented to the group identified upstream, midstream and downstream stages.⁴ Another working paper identified four phases: reductions, limitations, reaching zero and maintaining zero.⁵ Yet another working paper suggested that legal frameworks corresponding to each phase should be developed and taken into account.⁶

11. The Group discussed the robustness of verification. They received a working paper that addressed the notion of “perfect verification” and whether or not such perfection was attainable or necessary.⁷ The Group considered issues related to adequacy or sufficiency, with regard to the relationship between effective verification and trust. The Group also examined the possibility of developing tools and methodologies to undertake verification in future nuclear disarmament treaties. The Group affirmed that it could conceptually explore such matters but would leave it to future treaty negotiators to potentially undertake these activities.

12. A number of Experts observed that, at some point during the nuclear disarmament process a gradual transition may take place from bilateral verification arrangements to those that are of a certain multilateral dimension, which might render verification more cost-effective.

⁴ See “Considerations on the role of verification in advancing nuclear disarmament: background paper”, submitted by Ambassador Biontino (Germany) (GE-NDV/2018/4).

⁵ See “Main elements to be considered for effective verification of nuclear disarmament”, submitted by Ambassador Nakane (Japan) (GE-NDV/2018/10).

⁶ See “GGE to consider the role of verification in advancing nuclear disarmament”, submitted by Mr. Leontiev (Russian Federation) (GE-NDV/2018/13).

⁷ See “Effective verification”, submitted by Mr. Edinger (United States of America) (GE-NDV/2018/11).

13. A number of Experts noted that a credible multilateral verification regime in which all States have confidence will be essential for achieving and maintaining a world without nuclear weapons.

14. During the deliberations, a number of proposals were put forward by Experts for consideration on possible next steps. While there was no agreement on those proposals, they generated a substantial amount of discussion. Some of these suggestions were:

- Further conceptual work could be carried out on a definition of nuclear disarmament verification, as well as clarification of scope, institutional matters, governance and financing of nuclear disarmament verification
- A group of governmental experts to consider elaborating on the concept of a group of scientific and technical experts, on the basis of a working paper⁸
- A group of governmental experts to build on the work of the current Group on conceptual and technical aspects regarding nuclear disarmament verification
- A voluntary funding mechanism for capacity-building (nuclear disarmament verification trust fund), on the basis of a working paper⁹
- The Secretary-General of the United Nations to seek the views of Member States on being involved in capacity-building in nuclear disarmament verification

B. General observations on verification experiences

15. The Group listened to presentations on national experiences with nuclear disarmament in South Africa and Kazakhstan. It also received presentations on verification in the context of bilateral and multilateral agreements: the Treaty between the United States of America and the Russian Federation on Measures for the Further Reduction and Limitation of Strategic Offensive Arms (the New START Treaty), the Chemical Weapons Convention, and the Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials. There were briefings on the technical elements of the Comprehensive Nuclear-Test-Ban Treaty and International Atomic Energy Agency (IAEA) safeguards. The Group received presentations on recent or ongoing initiatives and exercises in nuclear disarmament verification: the United Kingdom-Norway Initiative on nuclear dismantlement verification, the Quad Nuclear Verification Partnership and the International Partnership for Nuclear Disarmament Verification. Engaging each presentation, the Group focused on extracting lessons that may be applicable for nuclear disarmament verification and to identify possible common denominators. The Chair's summary of these presentations, made in his own responsibility, is contained in annex I.

16. The discussion of different verification methods used in various agreements (either disarmament specifically or in relation to non-proliferation obligations) included, inter alia, declarations and material accountancy, containment and surveillance, non-destructive and destructive analysis methods, on-site inspections, environment sampling, information analysis and national technical means, with the Group noting that they may not all be applicable to nuclear disarmament verification.

⁸ See "Proposal on the establishment of a multilateral group of scientific and technical experts on nuclear disarmament verification within the Conference on Disarmament", submitted by Mr. Câmara (Brazil) ([GE-NDV/2019/1](#)).

⁹ See "Nuclear disarmament verification fund (NDV trust fund)", submitted by Ms. Werdaningtyas (Indonesia), Ambassador Langeland (Norway) and Dr. Chambers (United Kingdom of Great Britain and Northern Ireland) ([GE-NDV/2019/3](#)).

17. A number of Experts noted that nuclear disarmament verification remains a relatively new and largely untested field for many States. A number of Experts noted that in this past decade, there have been initiatives by States, non-governmental organizations and academic and research institutions that seek to explore options for future verification activities pertaining to nuclear disarmament. A number of Experts also noted that verification experiences in areas other than nuclear disarmament verification might also serve as reference if appropriate for future efforts on nuclear disarmament verification.

18. A number of Experts cited the Group of Scientific Experts which worked for almost 20 years on the specifics of a verification regime before a window of opportunity to negotiate a Comprehensive Nuclear-Test-Ban Treaty opened in 1993. They observed that the Group of Scientific Experts had built a culture of international technical cooperation that led to mutual confidence in the verification solutions developed and tested by the Group, and the result was a substantial contribution to the eventual Comprehensive Nuclear-Test-Ban Treaty. A number of Experts observed that further attention may be needed on how future work on nuclear disarmament verification may be best organized, inter alia, what sort of technologies may be applicable, governance and how verification tasks could be financed.

19. Referring to experiences, a number of Experts observed that when there is political will to reach a treaty and carry out its obligations, its verification has proven effective. A number of Experts affirmed that it is essential that the verification provisions of a treaty are clearly prescribed, including at the organizational and procedural levels. It was also expressed by a number of Experts that provisions for consultative and cooperative clarification mechanisms would be essential to the implementation of nuclear disarmament treaties. A number of Experts also noted the utility of certain flexibility in the execution of verification tasks in accordance with the provisions of relevant agreements.

C. Institutional set-up, support structures and capacity-building

20. When discussing institutional matters, the Group agreed that it was premature to answer the question of which institution or even which type of institution should verify the relevant agreements. It was generally reaffirmed that the specifics of a verification regime would have to be determined by individual treaties and the mechanisms they specify. A number of Experts observed the substantial differences between bilateral and multilateral treaty verification regimes. In this context, the Group discussed common features of existing relevant international organizations and discussed possible legal and political characteristics of a future organization involved in nuclear disarmament verification, on the basis of a working paper.¹⁰

21. Irrespective of the details of any particular treaty, a number of Experts underlined that considerable resources are likely to be required to ensure effective nuclear disarmament verification. In their view, the breadth of activities related to verification underlines the value of technical competencies, and the utility of a broad pool of verification knowledge – technical and otherwise.

¹⁰ See “Who verifies: parameters for multilateralization of initiatives”, submitted by Mr. Coppen (Netherlands), Mr. Herbach (Netherlands) and Mr. Wollenmann (Switzerland) (GE-NDV/2018/9).

22. There were several working papers on capacity-building.¹¹ The Group engaged in a discussion of the capacities that might be needed in developing technologies and methodologies for nuclear disarmament verification. There were a range of views expressed on the issue of capacity-building, including through voluntary cooperation among States.

23. A number of Experts stated that developing nuclear disarmament verification arrangements will require a broad spectrum of skills, in the technical field, in safety and security, in non-proliferation, as well as in the political field to understand the complexity of nuclear disarmament and other sensitivities. Capacity-building can facilitate in this respect.

24. A number of Experts affirmed that there is a role for voluntary funding for capacity-building in nuclear disarmament verification.

25. To build confidence, a number of Experts underlined the need to engage in capacity-building in nuclear disarmament verification that enables more States to be involved in nuclear disarmament verification. One option a number of Experts identified is to build on the relevant technical capabilities and expertise States already have in other relevant fields and adapt those resources and experience to nuclear disarmament verification. A number of Experts noted the importance of forming partnerships, including between nuclear-armed States and non-nuclear-weapon States. Differing views on these topics were also expressed.

26. A number of Experts observed that more efforts could also be made to establish nuclear disarmament and verification policy training courses. A number of Experts saw the utility of identifying national points of contact in order to participate in nuclear disarmament verification initiatives. They could also serve as focal points that can allow greater internal coordination, facilitating the sharing of experience and information concerning verification-related activities.¹² A number of Experts noted the need for a strong multilateral framework for capacity-building on nuclear disarmament verification. Some other Experts considered these measures premature.

III. Identification of possible points of convergence

A. Towards a concept on the role of verification in advancing nuclear disarmament

27. The Group noted that it had a unique opportunity as its mandate was the first to be focused on the role of verification in advancing nuclear disarmament. The Group observed that the issue has become a focus of increased international attention and activity.

28. The Group noted the impracticability of setting out prescriptions for a nuclear disarmament verification regime in the absence of treaty negotiations, but a number of Experts suggested the utility of considering aspects which may be relevant in verification arrangements for future treaties in order to achieve and maintain a world without nuclear weapons.

29. The Group stressed that while verification is not an end in itself, it is essential throughout the nuclear disarmament process.

¹¹ See “Nuclear disarmament verification – building capacity”, submitted by Dr. Chambers (United Kingdom of Great Britain and Northern Ireland) and Ms. Werdaningtyas (Indonesia) (GE-NDV/2018/12); and “Nuclear disarmament verification capacity-building”, submitted by Mr. Wang (China) (GE-NDV/2018/16).

¹² See “Nuclear disarmament verification – building capacity” (GE-NDV/2018/12).

30. The Group noted that nuclear disarmament verification must be balanced against legitimate sovereignty-, security-, safety- and proliferation-related concerns of the parties to the agreement.
31. The Group recognized the benefit of parties to limited membership nuclear disarmament treaties considering ways which are appropriate in order to inform non-State parties on the well-functioning of the verification in those specific treaties.
32. The Group agreed that the scope and particulars of a relevant verification regime would be determined by the specific nuclear disarmament treaty. The Group agreed that verification, consisting of legal, technical and political aspects, may be pursued in different ways.
33. The Group underlined that effective verification serves the primary purpose of providing assurance of compliance with obligations in a treaty or treaties on nuclear disarmament.

B. Principles on verification in advancing nuclear disarmament

34. The Group noted that the Member-State response to the Secretary-General's report on nuclear disarmament verification (A/72/304) contained much discussion of principles. The Group recognized at its first session that it could add value by elaborating certain principles for the role of verification in advancing nuclear disarmament. In elaborating these principles, it was recognized that they were indicative and not exhaustive.
35. The Group reaffirmed that the fundamental principles for verification of disarmament had been established in the final document of the first special session devoted to disarmament (1978) (A/S-10/4) and in the United Nations Disarmament Commission principles of verification (1988) and would serve as the foundation for its work.
36. The Group furthermore noted the report of the Group of Governmental Experts on verification in all its aspects (A/61/1028), as well as General Assembly resolution 62/21.
37. There were several working papers on principles related to nuclear disarmament verification.¹³ The Group subsequently engaged in discussion on these papers.
38. In view of the above, the Group suggested the following principles:
 - Nuclear disarmament verification should conform with international law and the principles laid out in the final document of the first special session devoted to disarmament (1978) and in the United Nations Disarmament Commission principles of verification (1988).
 - Nuclear disarmament verification measures should be decided by the parties to specific treaties, and all the parties to such treaties should have equal rights to establish and take part in verification activities.
 - Nuclear disarmament verification must conform to applicable international legal non-proliferation obligations, national safety and security requirements, and the need to protect otherwise sensitive information.

¹³ See "Nuclear disarmament verification principles", submitted by Mr. Moktefi (Algeria) (GE-NDV/2018/8); "Nuclear disarmament verification principles", submitted by Mr. Copen (Netherlands) and Mr. Le Floc'h (France) (GE-NDV/2018/15); "Basic principles of nuclear disarmament verification", submitted by Mr. Wang (China) (GE-NDV/2018/17); and "Structural elements: framework, principles, scope and scenarios", submitted by Ambassador Biontino (Germany) (GE-NDV/2018/14).

- Nuclear disarmament verification must be effective in ensuring compliance by the parties with obligations under the relevant treaty, while also being mindful of the need for efficiency in the application of financial, human and other resources.
- Nuclear disarmament verification provisions in the context of a specific treaty should be clear as to obligations of the parties concerned.
- A future nuclear disarmament verification regime must be non-discriminatory to the parties of the treaty.
- Verification arrangements, satisfactory to all parties involved, should correspond to the purposes, scope and nature of the agreement(s) reached on nuclear disarmament.

IV. Conclusions and recommendations

A. Conclusions

39. In considering the role of verification in advancing nuclear disarmament, the Group concluded that:

- Advancing nuclear disarmament is an ongoing undertaking, and there is need for a continued international examination of the issue in all its aspects, including verification.
- Verification is essential in the process of nuclear disarmament and to achieving a world without nuclear weapons.
- The role of verification in advancing nuclear disarmament will be determined on a case-by-case basis in the context of the negotiations of legally-binding agreements in the area of nuclear disarmament.
- A credible verification regime in which all States have confidence will be essential for maintaining a world without nuclear weapons.
- Confidence-building measures may complement nuclear disarmament verification arrangements between the implementing parties of a specific treaty.
- Engagement in nuclear disarmament verification must be strictly in line with applicable international legal non-proliferation obligations as well as other legal requirements.
- All States could contribute to aspects of nuclear disarmament verification and no State is restricted from developing verification techniques and methodologies.

B. Recommendations

40. The Group recommended:

- States Members of the United Nations, as well as relevant parts of the international disarmament machinery, in accordance with their respective mandates, consider this report;
- To consider further work related to the role of verification in advancing nuclear disarmament, taking into account the report of the Group of Governmental Experts.

Annex I

Chair's summary of the presentations made in relation to experiences in verification

1. The Group was informed about national experiences in South Africa and Kazakhstan. The Group also discussed the role of the International Atomic Energy Agency (IAEA) across both cases, and of the United States of America and the Russian Federation in Kazakhstan. It was affirmed that verification is especially difficult if done after the fact because of the demands put on record-keeping. For States with decades of nuclear weapons development and fissile material production, this could be a significant challenge. The Kazakhstan example also reveals the real and potential contribution of non-nuclear-weapon States in nuclear disarmament verification: with the participation of Kazakhstan in the work on the elimination of infrastructure of the former Semipalatinsk test site and the formation of data required for relevant verification procedures implementation by the Russian Federation and the United States. It should also be noted that a number of States, such as Japan, Norway, Sweden, Switzerland, the United Kingdom of Great Britain and Northern Ireland and many others, facilitated the process of the elimination of nuclear weapon testing consequences at the former Semipalatinsk test site.

2. There were several presentations on verification regimes linked to bilateral and multilateral treaties and conventions in force. They highlighted the importance of setting clear expectations on all sides through tightly prescribed provisions. The Chemical Weapons Convention contained separate verification procedures linked to its non-proliferation and disarmament obligations, requiring considerable scope and resources.

3. With respect to bilateral treaties, a presentation was given by the United States and the Russian Federation on the range of activities that are part of the verification regime of the New START Treaty. The presenters also highlighted the utility of the Bilateral Consultative Commission to address technical and practical issues.

4. A presentation on the Argentine-Brazilian Agency for Accounting and Control of Nuclear Materials underlined the partnership between it, Argentina, Brazil and IAEA. The quadripartite agreement has helped to prevent duplication and to ensure efficiency in activities. The Agency also negotiated with IAEA on procedures for identified sensitive facilities and information. This has cultivated greater confidence among parties, efficiency in procedures and special procedures to protect sensitive information.

5. Briefings were also given on verification-related activities. The Group of Scientific Experts engaged in much technical discussion that was eventually incorporated into the intrusive and non-discriminatory verification system of the Comprehensive Nuclear-Test-Ban Treaty. The Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization has also collaborated with States, including in training activities in preparation for eventual on-site inspections. Meanwhile, a briefing on IAEA underlined how safeguards can provide confidence of treaty compliance. IAEA has never been directly involved in nuclear weapons dismantlement. If IAEA were to be involved in safeguarding weapon-usable materials, then non-proliferation obligations and protecting sensitive information would have to be ensured. Its use of information barriers in the Trilateral Initiative can provide lessons. While efficiency (including costs) was important, safeguards effectiveness was the utmost priority.

6. The Group also had the opportunity to engage technical briefings by experts on recent or ongoing initiatives and exercises in nuclear disarmament verification. It

considered particularly how each initiative or exercise sought to engage non-nuclear-weapon States in verification activities while being mindful of non-proliferation obligations and the need to protect sensitive information.

7. The United Kingdom-Norway Initiative on nuclear dismantlement verification explored how a non-nuclear-weapon State might participate in verification of nuclear warhead dismantlement, with focus on information barriers and managed access. It was suggested that most States have the scientific and technical capabilities to undertake research and development on nuclear disarmament verification and can contribute to such verification processes. It was also observed that non-nuclear-weapon States could research technologies such as tags and seals, which were important because of the need for easily applicable and understandable inexpensive tools.

8. The Quad Nuclear Verification Partnership between Norway, Sweden, the United Kingdom and the United States has as objectives capacity-building – for all sides – and providing a realistic testbed for exercising and evaluating monitoring technologies and model verification strategies. It was noted that the simulation exercise highlighted the need to have elaborated procedures in advance as there were considerable logistical complexities. The Quad work also concluded that while non-proliferation was a concern, security and safety-sensitive information were more prevalent, suggesting that it might not matter much whether the inspecting party is a nuclear or non-nuclear-weapon State.

9. The International Partnership for Nuclear Disarmament Verification is a forum with many partners, including countries from different regions, different political backgrounds, with different views to advance nuclear disarmament verification. It was observed that the International Partnership work was mainly technical, aimed at research on verification of nuclear disarmament without compromising sensitive information. The concrete deliverables associated with the different working groups of the Partnership have been appreciated, and the Partnership's role in capacity-building has been beneficial.

Annex II

List of documents submitted by the Experts participating in the Group of Governmental Experts to consider the role of verification in advancing nuclear disarmament

<i>Symbol</i>	<i>Title</i>
GE-NDV/2018/4	Considerations on the role of verification in advancing nuclear disarmament: background paper
GE-NDV/2018/5	“Who”: capacities needed in nuclear disarmament verification
GE-NDV/2018/6	The “hows” of nuclear disarmament verification
GE-NDV/2018/7	Development of verification in the context of nuclear disarmament (the “what”)
GE-NDV/2018/8	Nuclear disarmament verification principles
GE-NDV/2018/9	Who verifies: parameters for multilateralization of initiatives
GE-NDV/2018/10	Main elements to be considered for effective verification of nuclear disarmament
GE-NDV/2018/11	Effective verification
GE-NDV/2018/12	Nuclear disarmament verification – building capacity
GE-NDV/2018/13	GGE to consider the role of verification in advancing nuclear disarmament
GE-NDV/2018/14	Structural elements: framework, principles, scope and scenarios
GE-NDV/2018/15	Nuclear disarmament verification principles
GE-NDV/2018/16	Nuclear disarmament verification capacity-building
GE-NDV/2018/17	Basic principles of nuclear disarmament verification
GE-NDV/2019/1	Proposal on the establishment of a multilateral group of scientific and technical experts on nuclear disarmament verification within the Conference on Disarmament
GE-NDV/2019/2	Establishment of group of scientific and technical experts on nuclear disarmament verification
GE-NDV/2019/3	Nuclear disarmament verification fund (NDV trust fund)