



**Summary Report
of the IPNDV Plenary Meeting
Ottawa, Canada
December 3-5, 2019**



The International Partnership for Nuclear Disarmament Verification (IPNDV - “the Partnership”) held the final Plenary Meeting of its Phase II in Ottawa, Canada, December 3-5, 2019. More than 89 experts from 23 countries and the European Union participated.

In addition to the three days of meetings, some of the participants attended a Technology Demonstration hosted by the Canadian Nuclear Laboratory Chalk River highlighting muon tomography that could be applicable to the verification of future nuclear warhead dismantlement. Summaries of the outcomes of each of the Working Groups as well as the Phase II exercises and technology demonstrations, and a discussion of the proposed Program for Work Phase III follow.

Working Group 4 - Verification of Nuclear Weapon Declarations (Co-Chairs: The United Kingdom and Poland)

Over the course of the first two days of the Plenary Meeting, Working Group 4 (WG4) met to finalize drafts of parts 1-3 of the WG4 Phase II deliverable, specifically checking for clarity and consistency of the messaging across the three documents. These deliverable parts cover: an introduction to the verification of nuclear weapons declarations; potential options for declarations of nuclear weapons; and, state-wide verification of absence of undeclared weapons. Deliverable parts 4 and 5, covering a collection of in-depth study papers and the Treaty on Conventional Armed Forces in Europe (CFE) exercise from the June Working Group Meeting, had been completed in the intercessional period prior to the Ottawa meeting. Along with a review and edit of a list of terms to be included in the final deliverable, WG4 finished its work for Phase II, and is on track to meet its final publishing schedule.

- Deliverable part 1 is focused on objectives and types of declarations throughout the disarmament process
- Deliverable part 2 is a consideration of the potential options for verification of a declaration of all nuclear weapons within a State.
- Deliverable part 3 studies the verification of the absence of nuclear weapons at undeclared locations within a state
- Deliverable part 4 is a collection of more in-depth papers on specific relevant topics including; on the categorization of nuclear weapons, nuclear cultural anthropology, statistical methods for evaluating confidence in compliance, and resolving inspection ambiguities.
- Deliverable part 5 provides a report of the tabletop exercise WG4 conducted on the CFE Treaty and all the materials needed to repeat this exercise should others wish to.

Working Group 5 - Verification of Reductions **(Co-chairs: The Netherlands and Australia)**

During the Ottawa Plenary, Working Group 5 finalized its work on the deliverable addressing verification requirements for each of the 14 steps of nuclear weapon dismantlement, as well as on two Food-for-Thought papers. The deliverable document:

- Elaborates “step maps” that offer a conceptual description of the verification process at each of the 14 steps. Each step map sets out inspection objectives and approaches as well as potential technologies and considers how to protect proliferation- and nationally-sensitive information as well matters such as physical security and health and safety; and
- Discusses in further detail many of the verification issues that are common to one or more of the 14 steps, or that focus on the process as a whole. In that context the group looked again at issues of (ir)reversibility.

The Food-for-Thought papers are:

- A “deep-dive” assessment of disposition pathways and verification options for special nuclear material from dismantled weapons;
- A discussion of elements and options for a multilateral regime to verify nuclear warhead dismantlement. This aims to augment the abovementioned work on inspection concepts, approaches and technology for dismantlement verification.

Working Group 6 - Technologies for Verification **(Co-chairs: Sweden and the United States)**

On Tuesday, the group reviewed the status of remaining WG6 deliverables, before turning to the results of the Belgian measurement campaign which took place in September 2019. Seven countries, including Belgium, provided detailed presentations on their results from the campaign. In a joint WG 5/6 meeting, the two groups discussed a Food-for-Thought paper by Canada on potential pathways for placing weapons material under IAEA safeguards. The group also discussed the joint Step 14 HEU and plutonium disposition Food-for-Thought paper. On Wednesday, WG6 members heard a presentation from Australia on how Venn diagrams could be used to present the data and information on monitoring tools and technologies. Canada also provided a briefing on their recent demonstration on the applicability of muon tomography in identifying the presence or absence of special nuclear material in a container.

Exercise/Demonstration Planning

- During a joint session on the final day of the Plenary Meeting, the hosts of each technology demonstration/exercise held during the previous inter sessional period – Belgium, Canada, France, Germany, and the Netherlands – provided readouts of these

events to the Partners. These readouts provided comprehensive overviews of the demonstrations/exercises, while highlighting the successes and lessons learned from planning and executing each event. These exercises and technology demonstrations marked a concrete effort of the Partnership to move from “paper to practice,” which will be continued in the next phase of work.

Phase III Draft Program of Work

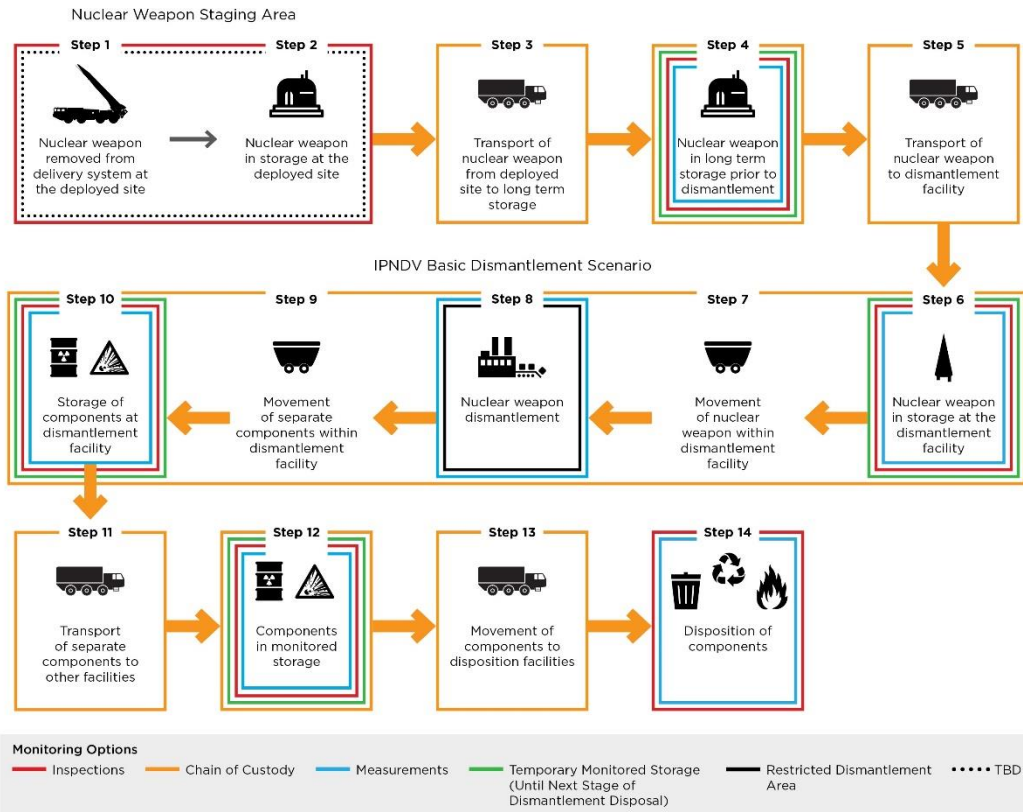
All three of the working groups had productive discussions on the draft Program of Work (POW) for Phase III. Following a briefing by the Secretariat on the draft POW, participants broke into three groups to discuss the draft document during two separate sessions. Overall there was widespread agreement that Phase III should involve more practical activities like live-play and tabletop exercises, and technology demonstrations that could continue the Partnership’s move from paper to practice. Such practical activities could provide a realistic framework against which to assess the verification concepts and approaches developed by the Partners over Phases I & II. Partners also discussed the need to regularly take stock of the work being done by the task groups. A final draft POW will be circulated ahead of the next working meeting in Geneva in March, with the goal of finalizing the POW and beginning the work of Phase III.

Summary

At the completion of the Ottawa Plenary, the Partnership published a Summary Report for Phase II. In addition, the final working group products will be published over the course of the next 2 months in time for the Swiss-hosted outreach event “Innovations in Nuclear Disarmament Verification: Advancing Technology and Approaches” in March 2020. These products will provide the foundation for the work of Phase III which will see more hands-on work, as the Partners move “from paper to practice.”

Annex 1- 14 Steps in Nuclear Weapons Dismantlement

MONITORING AND VERIFICATION ACTIVITIES, AS IDENTIFIED BY THE IPNDV,
FOR KEY STEPS IN THE PROCESS OF DISMANTLING NUCLEAR WEAPONS



*We make the assumption that there will be declarations at each step in the process.