



25 February 2016

**Taking Forward Multilateral Nuclear Disarmament Negotiations:
Open-ended Working Group**

Palais des Nations, Geneva: 25 February 2016

UN General Assembly Resolution 70/33

OP.3 Decides that the open-ended working group shall also substantively address recommendations on other measures that could contribute to taking forward multilateral nuclear disarmament negotiations, including but not limited to (a) transparency measures related to the risks associated with existing nuclear weapons; (b) measures to reduce and eliminate the risk of accidental, mistaken, unauthorized or intentional nuclear weapon detonations; and (c) additional measures to increase awareness and understanding of the complexity of and interrelationship between the wide range of humanitarian consequences that would result from any nuclear detonation;

Nuclear Weapons: Transparency and Risk Reduction

Tariq Rauf¹

- 1. What are the challenges facing global nuclear weapon governance and how can it be strengthened?*

The convening of a second Open-ended Working Group to carry out work further to the first OEWG is a welcome development particularly in light of the exacerbated differences over nuclear disarmament witnessed at last year's NPT Review Conference. The question of transparency measures, measures to reduce the risk of accidental detonation of nuclear weapons, and the humanitarian and environmental consequences of any further use of nuclear weapons, have all been discussed in great

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depth previously in many forums, and volumes of scientific and technical analyses are available. There is no dearth of feasible concepts, ideas, measures and plans. What is missing though is the political will and determination to tackle the complex questions associated with accountability, control, transparency and verification of measures to disable and dismantle nuclear weapons and to achieve a world without nuclear weapons.

Albert Einstein when asked why physicists were able to invent nuclear weapons but politicians were hard pressed to control them, said “Because politics is more difficult than physics”.² That remains the crux of the problem – the science and technology already exists to dismantle and eliminate nuclear warheads and associated weapon-usable materials; what is lacking is the political commitment and engagement to realize a world without nuclear weapons.

The nuclear-weapon States have undertaken a legally binding obligation pursuant to Article VI of the NPT to disarm, however, they have not and do not engage in any meaningful discussion on nuclear disarmament in any forum other than the NPT review process, except for the bilateral Russia-US track, and the other nuclear-armed States absent any binding commitment are not accountable in any forum. Worst yet, divisions amongst the non-nuclear-weapon States are at their worst since the NPT entered into force in 1970.

The 1995 NPT Review and Extension Conference decided to extend the NPT indefinitely inter alia in the context of the “Principles and Objectives for Nuclear Non-Proliferation and Disarmament”, which document contained certain measures contributing to nuclear disarmament, such as the Comprehensive Nuclear-Test-Ban Treaty and a fissile material cut-off treaty (FMCT). As an aside, 2016 marks the twentieth year since the CTBT opened for signature and it has yet to enter into force, and the 21st year since the fudge reflected in the “Shannon mandate”³ on negotiating a FMCT was agreed – this sorry situation speaks volumes about the obstacles standing in the way of nuclear disarmament.

For the first time, the nuclear-weapon States agreed at the 2000 NPT Review Conference, in its Final Document, on specified measures related to nuclear disarmament including transparency and irreversibility. And, in 2010, the Review Conference stumbled into agreeing on so-called “64 actions”, including several on nuclear disarmament – some of which in fact backtracked on the measures agreed in 2000. Last year’s failed NPT Review Conference witnessed some of the most uncivil discourse on nuclear disarmament that I personally have had the misfortune to hear since I got involved with the NPT in 1987.

² Quoted in TIME, 15 February 2016, p.28.

³ CD/1299.



Now here we are in February 2016, the Chinese year of the Monkey – legend has it that monkeys are clever, some believe that the species *homo sapiens* evolved from primates – without engaging in an anthropological diversion, suffice it say that as a distinct genus we should be smart enough to put aside our differences and to coalesce behind a common Darwinian goal: survival.

Survival in its most basic sense also relates to nuclear weapons, as over the longer run unless we eliminate nuclear weapons there is a good chance they will eliminate us.

Thus, as regards nuclear governance while the non-proliferation has been progressively strengthened over past decades, the disarmament pillar remains flimsy even as some 45,000 warheads have been retired.

Transparency

2. *What are the risks associated with nuclear weapons? What transparency measures exist, and how should they be supplemented?*

Transparency or openness refers to availability of information with the goal of greater accountability and increased public trust. Transparency also means providing sufficient information on military and security matters to instill confidence which is essential as the basis for developing the mutual trust required to successfully conduct any meaningful international negotiations, and to facilitate international monitoring and verification, thereby reducing the risk of conflict and promoting disarmament.⁴

Transparency has been described as one of five norms for bilateral and multilateral arms control measures, among enforceability, irreversibility, verifiability and universality.⁵ Traditionally, from the very beginning of the age of nuclear weapons through the Cold War to the present state of uncertainty, secrecy has been a defining characteristic of nuclear weapons primarily in terms of technology but also doctrine. For understandable security reasons, technical information on nuclear weapons and weapon-usable material is subject to the highest levels of classification.

Nonetheless, over the past 25 years the veil of secrecy has been lifted to a significant extent and a lot of information has been declassified and is available in the open domain. In the strengthened review process of the NPT, transparency has increased in salience and in the 2000 NPT Conference final document, one of the “practical steps” was “increased transparency by the nuclear-weapon States with regard to the nuclear weapons capabilities and the implementation of agreements pursuant to article VI and

⁴ See, Public Guide to Department of Energy Openness Program”, <http://www.fas.org/sgp/othergov/opendoe.html>.

⁵ See, Randy Rydell, “Nuclear Weapon State Transparency, the Nuclear Non-Proliferation Treaty, and the United Nations”, United Nations Headquarters, 22 October 2013.

as a voluntary confidence-building measure to support further progress on nuclear disarmament”.⁶ In 2010, the NPT States agreed that “nuclear disarmament and achieving the peace and security of a world without nuclear weapons will require openness and cooperation, and affirms the importance of enhanced confidence through increased transparency and effective verification”.⁷

This was followed up in the PrepCom for the 2015 NPT Review Conference, in 2012 the Non-Proliferation and Disarmament Initiative (NPDI) tabled a paper on transparency of nuclear weapons that called on the NWS to provide information on: (a) the number, types (strategic or non-strategic) and status (deployed or non-deployed) of nuclear warheads; (b) the number and, if possible, types of delivery vehicles; (c) the number and types of weapons and delivery systems dismantled and reduced as part of nuclear disarmament efforts; (d) the amount of fissile material produced for military purposes; (e) the measures taken to diminish the role and significance of nuclear weapons in military and security concepts, doctrines and policies; and to continue discussions on definitions and terminology related to nuclear weapons.⁸

Also in 2012, the New Agenda Coalition proposed that “to further enhance transparency and increase mutual confidence, nuclear-weapon States should commit themselves to annually submitting accurate, complete and comprehensive reports on their nuclear arsenals, weapons-grade highly enriched uranium and plutonium stockpiles and production histories, in addition to material irreversibly removed from nuclear weapons programmes”.⁹

At the 2013 NPT PrepCom, the Group of Non-Aligned States called for “clear and verifiable declarations by States of their stocks of nuclear weapons and nuclear-weapons-usable material and agreement on a multilateral mechanism to monitor reductions by nuclear-weapon States of their nuclear arsenals individually, bilaterally or collectively”.¹⁰ The New Agenda Coalition called for a comprehensive scheme for

⁶ 2000 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, Final Document, Volume I, NPT/CONF.2000/28 (Parts I and II), Step 9, p.15.

⁷ 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, Final Document, Volume I, Part I, NPT/CONF.2010/50 (Vol. I), p.24, F.i.

⁸ Preparatory Committee for the 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, “Transparency of nuclear weapons: the Non-Proliferation and Disarmament Initiative, Working paper submitted by Australia, Canada, Chile, Germany, Japan, Mexico, the Netherlands, Poland, Turkey and the United Arab Emirates, NPT/CONF.2015/PC.I/WP.12.

⁹ Preparatory Committee for the 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, “Multilateral nuclear disarmament verification: Applying the principles of irreversibility, verifiability and transparency”, Working paper submitted by South Africa on behalf of Brazil, Egypt, Ireland, Mexico, New Zealand and Sweden as members of the New Agenda Coalition, NPT/CONF.2015/PC.I/WP.30.

¹⁰ Preparatory Committee for the 2015 Review Conference of the Parties to the Treaty on the



transparency on nuclear weapon holdings, dismantlements, locations, nuclear doctrines, operational status, and risk reduction.¹¹ The States of the Arab League also called for transparency regarding nuclear weapons,¹² as did the New Agenda Coalition.¹³

At the 2014 NPT PrepCom, calls for transparency were made by the NPDI,¹⁴ the NAC,¹⁵ the LAS,¹⁶ and the NAM.¹⁷ The US submitted a Fact Sheet on “Transparency in the U.S. Nuclear Weapons Stockpile”¹⁸ that provided information in several categories on US nuclear weapons.

The reports of Main Committee I and Subsidiary Body 1 of the 2015 NPT Review Conference included calls for increased transparency, including a call on the nuclear-weapon States to provide annual reports starting in 2017 on¹⁹:

- i. the number, type (strategic or non-strategic) and status (deployed or non-deployed) of nuclear warheads;
- ii. the number and the type of delivery vehicles;
- iii. the measures taken to reducing the role and significance of nuclear weapons in military and security concepts, doctrines and policies;
- iv. the measures taken to reduce the risk of unintended, unauthorized or accidental use of nuclear weapons;

Non-Proliferation of Nuclear Weapons, “Nuclear disarmament – Working paper presented by the Group of Non-Aligned States Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, NPT/CONF.2015/PC.II/WP.14.

¹¹ Preparatory Committee for the 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, “Applying the principle of transparency in nuclear disarmament”, Working paper submitted by Brazil on behalf of Egypt, Ireland, Mexico, New Zealand and South Africa as members of the New Agenda Coalition, NPT/CONF.2015/PC.II/WP.26.

¹² Preparatory Committee for the 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, “Nuclear disarmament”, Working Paper submitted by Tunisia on behalf of the States members of the League of Arab States, NPT/CONF.2015/PC.II/WP.40.

¹³ NPT/CONF.2015/PC.II/WP.27.

¹⁴ NPT/CONF.2015/PC.III/WP.9 and NPT/CONF.2015/PC.III/WP.10.

¹⁵ NPT/CONF.2015/PC.III/WP.25.

¹⁶ NPT/CONF.2015/PC.III/WP.11.

¹⁷ NPT/CONF.2015/PC.III/WP.15.

¹⁸ NPT/CONF.2015/PC.III/16.

¹⁹ 2015 NPT Review Conference, Subsidiary Body 1: Revised draft substantive elements, NPT/CONF/2015/MC.I/SB.1/CRP.1/Rev.1,

<http://www.reachingcriticalwill.org/images/documents/Disarmament-fora/npt/revcon2015/documents/SBI-CRP1-Rev1.pdf>.

- v. the measures taken to de-alert or reduce the operational readiness of nuclear weapon systems;
- vi. the number and type of weapons and delivery systems dismantled and reduced as part of nuclear disarmament efforts;
- vii. the amount of fissile material for military purposes.

This is a reasonable reporting format for transparency, however, to this listing could be added:

- viii. the number, type and status (deployed or non-deployed) of non-strategic nuclear warheads on the territories of non-nuclear-weapon States;
- ix. the number and the type of delivery vehicles relating to item viii above;
- x. historical accounting of nuclear weapons deployed in foreign countries.

INFORMATION ON NUCLEAR WARHEAD AND FISSILE MATERIAL INVENTORIES AND STATUS

	United States	Russia	Britain	France	China
Number of total warheads	Approximate	No	Yes (upper limit)	Yes (upper limit)	Relative (out of date)
Number of deployed warheads	Yes (strategic only)	Yes (strategic only)	Yes (planned)	Yes	No
Dismantlements	Yes	No	Yes (no details)	Yes (no details)	No
Verification	Partial	Partial	No	No	No
Fissile material stockpiles	Yes	No	Yes (no details)	No	No
Production histories	Yes	No	No	No	No
Excess/Disposal	Yes (nothing new)	Yes (nothing new)	Yes (nothing new)	No	No
Verification	Partial	Partial (but no longer)	Partial (some plutonium)	No	No
International R&D Activities	Yes	No	Yes	No	Some

Global Fissile Material Report 2015

Source: International Panel on Fissile Materials, *2015 Global Fissile Material Report*.

I will revert to the matter of transparency and how to deal with transparency measures, later in this paper.

Nuclear Weapon Risks

With regard to the specific risks associated with nuclear weapons, there is no better analysis than that in the report of the *Global Zero Commission on Nuclear Risk Reduction: De-Alerting and Stabilizing the World's Nuclear Force Postures*,²⁰ that was launched and presented during the 2015 NPT Review Conference – unfortunately not many delegations were in attendance. The Global Zero Commission was chaired by the former Vice Chairman of the US Joint Chiefs of Staff General James Cartwright and included some 30 diplomatic and military experts, drawn from nearly all of the nine States currently deploying nuclear weapons; supported by more than 75 former national security experts and military commanders, as well as senior political officials. The following description of the risks of nuclear weapons are drawn from the Global Zero Commission report:

- One-half of Russian and US strategic nuclear forces are maintained on continuous high-alert – nearly 1,800 nuclear warheads are on launch-on-warning status. Both States continue with postures to launch nuclear forces after incoming warheads are detected by early warning satellites and ground radar but before the attacking warheads arrive; as a consequence, they run the risk of launching on false indications of enemy attack and false alarms have resulted in close calls for mistaken launch on numerous occasions. The current nuclear modernization programmes in both Russia and the US essentially are replicating the inherently risky legacy postures with new weapons systems.
- Disciples of nuclear deterrence theory continue to maintain that leaders behave more cautiously in the face of real risks of loss of control and apocalyptic threats to their homeland. In practice, deterrence is a poor construct for reducing operational nuclear risks, because deterrence encourages the players to take operational risks to impress, to signal credibility of intent and credibility of capability not only during a crisis but also in peacetime. Nuclear weapons have become tools of coercive diplomacy, blackmail and other intimidation and such risky behaviour has been on display in past nuclear confrontations like the Cuban missile crisis of 1962 and the Arab-Israeli war of 1973.
- According to the *2015 Global Fissile Material Report* published by the International Panel on Fissile Materials,²¹ the number of nuclear warheads reached a maximum total of over 60,000 in the 1980s. According to preliminary SIPRI nuclear weapons data for 2016, today nine States possess a

²⁰ Global Zero: A World Without Nuclear Weapons, *Global Zero Commission on Nuclear Risk Reduction: De-Alerting and Stabilizing the World's Nuclear Force Postures*, April 2015, www.globalzero.org. Cited with the permission of Global Zero.

²¹ International Panel on Fissile Materials, *Global Fissile Material Production 2015*.

total of over 15,350 nuclear warheads.²² Russia and the US account for nearly 14,700 warheads, with about 180 warheads in the UK, about 300 in France, about 260 in China, 100-200 in Israel, about 80-120 in India, 110-120 in Pakistan, and 6-8 in the DPRK. As described by the Global Zero Commission, these nuclear weapons are part of complex and dynamic operations and nuclear war preparations. Strategic missile submarines, land-based missiles in fixed underground silos or on mobile launchers stand ready to receive the go-code for launch. A thousand nuclear weapons roam on combat patrol every day, and hundreds continuously stream back and forth between their combat alert sites and their maintenance facilities.

- Again, as described by the Global Zero Commission, nuclear missile attack early warning teams in Russia and the US maintain constant vigilance searching space and the skies for incoming warheads. Every day they receive and process sensor data from satellites or ground radar to urgently assess whether or not a missile attack is underway. A host of phenomena catch the attention of their surveillance sensors and have to be evaluated rapidly – such as a Japanese rocket lifting a commercial satellite into space, a Chinese anti-satellite missile test, Russian and US test firings of a nuclear-capable missiles from submarines and silos, the rising Moon, a flock of geese, a volcanic eruption, or a test tape fed into the active warning system.
- The Global Zero Commission report stated that practically all nuclear-weapon possessor States prepare and exercise detailed plans to employ nuclear weapons in combat, and to blunt through offensive and defensive operations their adversaries' employment should hostilities erupt. The two big nuclear-weapon States routinely conduct intensive surveillance on one another and square off in close quarters as, for instance, submarines trail each other, reconnaissance aircraft probe borders for gaps in air defences, and fighter planes hang on the wings of opposing strategic bombers on practice bombing runs. And, in the West European States deploying nuclear weapons, nuclear-capable aircraft also routinely carry out practice bombing runs while the safety and security of nuclear-weapon storages remains a matter of concern.
- As noted by the Global Zero Commission, the nuclear weapon activities described above run myriad risks in their daily operations, risks that compound during crises. Such risks include, deterrence failure if national survival is perceived at risk or under critical military exigencies, resulting in the deliberate or unintentional initiation of nuclear strikes; accidental detonations; unauthorized launches; and panic launches caused by false indications of incoming enemy warheads coupled to hasty decision timelines. Growing risks of cyber attack are increasing.

²² Stockholm International Peace Research Institute (SIPRI), *SIPRI Yearbook 2016*, forthcoming.

- The fast paced development of advanced precision-guided conventional weapons are blurring the distinction with low yield nuclear weapons, and platforms deploying a mix of advanced conventional and nuclear weapons will create new instabilities, increased risk of launch on warning or pre-emptive strikes, and heightened risk of early use of nuclear weapons.
4. *How can compliance with transparency measures be achieved and completeness of information verified?*

At the 2015 NPT Review Conference, US Secretary of State John Kerry informed that “as of September 2014, the number of nuclear weapons in our stockpile has fallen to 4,717, or 85 percent below the Cold War peak. And yes, still way too many. Over the last 20 years alone, we have dismantled 10,251 warheads, with another approximately 2,500 warheads retired and in the queue for elimination”.²³ The UK stated that it had reduced the number of warheads on each of its deployed ballistic missile submarines from 48 to 40, and the number of operational missiles on each of those submarines to no more than eight. The total number of operationally available warheads to no more than 120, which will enable the UK to reduce its overall nuclear warhead stockpile to not more than 180 by the mid-2020s.²⁴ France informed that it had fewer than 300 nuclear warheads, no non-deployed weapons, and all of its weapons were deployed and operational.²⁵ China noted that its nuclear arsenal was very limited in scale and was kept at the minimum level required for national security, thus enabling China to make significant contributions to the international nuclear disarmament process.²⁶

The Russian Federation stated that as of 1 March 2015, it possessed 515 deployed strategic offensive delivery vehicles with 1,582 warheads attributed to them under the START Treaty; and an aggregate 890 deployed and non-deployed launchers for ICBMs, SLBMs and heavy bombers, and nearly 3,500 nuclear warheads for non-strategic systems had been eliminated between 1988-1991.²⁷

While this transparency in nuclear weapon reductions holdings is welcome, other than the bilateral verification under START between Russia and the US, verification of

²³ Remarks at the 2015 Nuclear Nonproliferation Treaty Review Conference, John Kerry, Secretary of State, United Nations New York City, NY, 27 April 2015.

²⁴ 2015 Review Conference of the Treaty on Non-Proliferation of Nuclear Weapons: New York, 27 April – 22 May 2015, General Debate, Statement by the United Kingdom.

²⁵ Report submitted by France under actions 5, 20 and 21 of the Final Document of the 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, NPT/CONF.2015/10.

²⁶ Implementation of the Treaty on the Non-Proliferation of Nuclear Weapons in the People’s Republic of China, Report submitted by China, NPT/CONF.2015/32.

²⁷ National report submitted by the Russian Federation, NPT/CONF.2015/48.

these measures is not available to the non-nuclear-weapon States – more about this later.

With regard to transparency, earlier in December 1993, and in June 1994 and February 1996, US Secretary Hazel O’Leary of the US Department of Energy (DoE) announced the largest declassification of information in the history of the DoE. This information covered inter alia the history of the US production and stocks of highly enriched uranium (HEU) and plutonium (Pu). In addition, certain aspects of the US nuclear weapons stockpile also were declassified. In December 1994, the US also declassified information on its nuclear explosions in a report, “United States Nuclear Tests: July 1945 through September 1992”. The US informed that its total production of plutonium was 111.4 MT between 1944-1994 when production was terminated. The current US plutonium inventory was declared to be 99.5 MT – 12 MT had been removed from the total inventory, comprising 3.4 MT expended in weapon tests, 3.4 MT in normal operating losses, and 2.8 MT in inventory differences (or material not accounted for). The US plans to retain a strategic reserve of about 23 MT weapon-grade plutonium in roughly 7,800 intact pits. In addition, the US declared the locations of its plutonium stocks, waste sites and inventory differences. In June 2012, the US provided updated data and stated its current plutonium inventory as 95.4 MT marking a reduction of 4.1 MT between 1994-2009.²⁸

The US also provided a historical report on its highly enriched uranium production, acquisition and utilization activities from 1945 through 30 September 1996, as well as the locations of its HEU stocks. In 1996, the total US historical production was about 860 MTU-235 with the then inventory of 740.7 MTU HEU, containing 620.3 MTU-235, and provided data on the quantities of HEU at enrichment levels between 20% and below 90%, and above 90%. Of the total HEU inventory, 562.9 MTU was set aside for national security (160 MTU for naval propulsion and weapons) and for non-national security (20 MTU for research reactors); and 177.8 MTU was declared surplus for down-blending and for disposal – 17.4 MTU has been downblended to yield some 290 MTU LEU for the American Assured Fuel Supply. Some 32 MTU-235 of HEU was consumed in nuclear weapon tests and naval propulsion. Another 32 MTU-235 of HEU was sent to the UK for research reactor and naval fuel. US production of HEU was terminated in 1964, and a total of 164 MT HEU was produced for naval reactors

²⁸ US Department of Energy, *DOE Facts: Declassification of the United States Plutonium Inventory and Release of Report, “Plutonium: The First 50 Years”*; US Department of Energy, *Plutonium: The First Fifty Years: United States plutonium production, acquisition, and utilization from 1944 through 1994*, DOE/DP-0137, February 1996; and US National Nuclear Security Administration (NNSA), *The United States Plutonium Balance, 1944-2009 – An update of “Plutonium: The First Fifty Years”*, June 2012; Thomas B. Cochran, “U.S. Inventories of Nuclear Weapons and Weapon-Usable Fissile Material”, Natural Resources Defense Council, 26 September 1995; and US Department of Energy, *Tritium and Enriched Uranium Management Plan Through 2060*, Report to Congress, October 2015.



between 1962 and 1992 for an estimated 600-750 reactor cores, with about 250 kg per core.²⁹

In 2006, the UK provided a historical accounting of its HEU stocks and declared that it had produced and acquired 26.36 MTU-235 for military uses, expended 4.72 MT and had an inventory of 21.86 MTU-235 in 2002.³⁰

For its part, in 1994 Russian President Boris Yeltsin set up a commission to declassify information on the early history of the Soviet Union's nuclear weapon programme and the origins of Soviet strategic missiles. In 1996, Viktor Mikhailov, Minister of Atomic Energy of the Russian Federation, issued a publication entitled, "USSR Nuclear Weapons Tests and Peaceful Nuclear Explosions, 1949-1990". This 62-page document chronologically listed all 715 Soviet nuclear tests and peaceful nuclear explosions (PNEs). Information also was released on the approximate stocks of weapon-usable HEU and Pu. Incidentally, for the record, the first time that previously classified information was provided on Soviet nuclear detonations to a Western audience, was at a Symposium on Underground Nuclear Weapons Testing that I and my colleagues at the-then Canadian Centre for Arms Control and Disarmament organized in Ottawa on 21-26 April 1991.³¹ The Russian Federation has downblended 500 MTU-235 of ex-weapon-HEU to LEU and transferred the LEU to the US under the "Megatons to Megawatts" programme under the 1993 U.S.-Russia HEU Purchase Agreement.³²

Why am I presenting all this data here today? Basically to highlight the point that a lot of declassified information is available that serve the purposes of accountability and transparency, but the non-nuclear-weapon States that clamour for more do not utilize the information already available – I have yet to witness non-nuclear-weapon States engaging with the nuclear-weapon States on the available data during the NPT review process, in the preparatory committee, main committee I and subsidiary body 1 sessions or during the time for "interactive discussions" under the strengthened review process, to probe for additional explanations and information. Nor for that matter do

²⁹ US Department of Energy, *Highly Enriched Uranium: Striking A Balance - A Historical Report on the United States Highly Enriched Uranium Production, Acquisition and Utilization Activities from 1945 through 30 September 1996*, January 2001; and Steven Aftergood and Frank von Hippel, "The U.S. Highly Enriched Uranium Declaration: transparency deferred but not Denied", *Nonproliferation Review*, Vol.14, No.1. March 2007.

³⁰ UK Ministry of Defence, *Historical Accounting for UK Defence Highly Enriched Uranium - A report by the Ministry of Defence on the role of historical accounting for Highly Enriched Uranium for the United Kingdom's Defence Nuclear programmes*, March 2006, <http://fissilematerials.org/library/mod06.pdf>.

³¹ See, Tariq Rauf, "Cleaning Up with a Bang", *Bulletin of the Atomic Scientists*, Vol. 48, No. 1, 31 December 1992, and Peter Brogden, "Underground Nuclear Testing: The Old Arrogance Remains", 14 August 1991, Science for Peace (Canada), <http://scienceforpeace.ca/underground-nuclear-testing-the-old-arrogance-remains>.

³² <http://nnsa.energy.gov/mediaroom/pressreleases/megatonstomegawatts>.

the nuclear-weapon States engage in depth with the non-nuclear-weapon States on the reports that they have provided on their weapons, materials and related matters, though they do on occasion hold side briefings during NPT meetings that could see better attendance and engagement from delegates. The general practice is silence or one or two perfunctory questions and the sessions are adjourned for lack of discussion. So, what is the purpose and benefit of demanding more transparency but then not knowing what to do with it? Actually, civil society experts are more adept and diligent in following up on data on nuclear weapons and materials than are delegations. The much touted Group of Governmental Experts on the FMCT could have examined the type of information that I have highlighted today? This shows that the opposition to the inclusion of stocks in the negotiating mandate of an FMCT is not based on science or on fact; it is based on sheer obduracy and obstructionism.

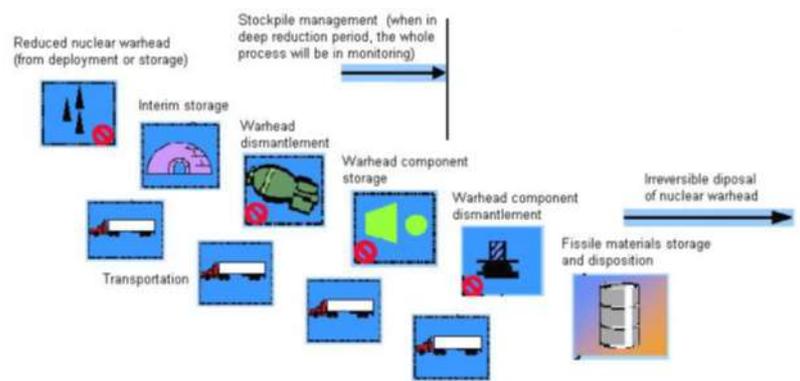
Verification of transparency measures

Verification of transparency measures, in particular of nuclear warhead dismantling and elimination, remains a major challenge. There are both legal and practical impediments. Pursuant to Articles I and II of the NPT, it will not be legally possible to share classified nuclear weapons information that gets into the complex details of warhead design, fissile material shapes and isotopics, fuzing and firing mechanisms, and safety and security features among other details. From a practical perspective, it is highly unlikely that nuclear-armed states will share nuclear weapon information with their counterparts due to military-strategic, as well as legal, reasons. The UK-Norway nuclear verification experiment is a case in point. More importantly, the UK-US cooperation to address technical challenges in verification of nuclear disarmament³³ that goes back more than a decade, still faces differences of opinion on key technical matters and the two sides have yet to agree on a methodology to characterize a nuclear warhead as such. The *Joint US-UK Report on Technical Cooperation for Arms Control* noted that “An overarching lesson learned is that the ability to strike a balance between information protection and information sufficiency is key to an effective monitoring and verification regime . . . There are many difficult and highly complex classification, access, technology and legal challenges that will need to be addressed to implement a warhead dismantlement verification regime. From a technical perspective, however, monitoring and verification of nuclear warheads, components and sensitive processes is feasible. Developing the necessary technologies and approaches to successfully monitor warhead dismantlement takes time. Warheads and associated processes are complex. Safety and security procedures are exceptionally rigorous and not amenable to change. • Familiarity with concepts and practice with approaches pays important dividends. Ongoing bilateral

³³ National Nuclear Security Administration (NNSA) and Aldermaston Weapons Establishment (AWE), “Overview of US and UK Cooperation to Address Technical Challenges in Verification of Nuclear Disarmament”, 2 May 2014, <http://nnsa.energy.gov/sites/default/files/nnsa/05-14-inlinefiles/2014-05-06%20Final%20US-UK%20Overview%20to%20Prepcom.pdf>.

technical cooperation helps both countries gain confidence in their ability to protect classified and sensitive information and determine where work is still needed”.³⁴

Nuclear Warhead: Chain of Custody

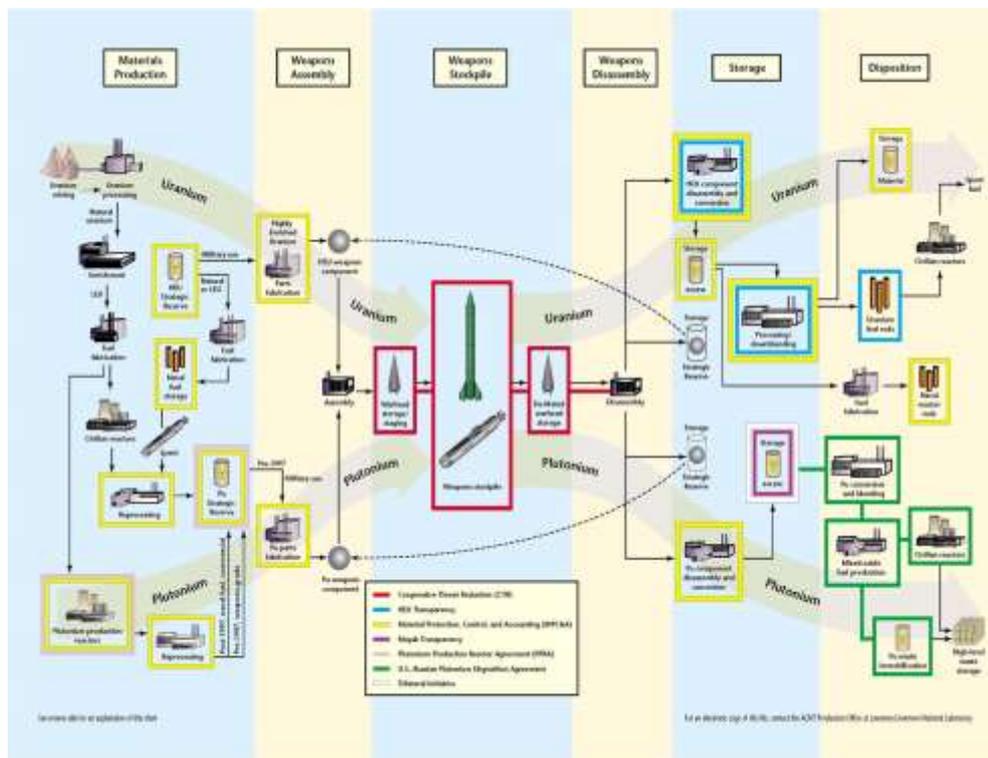


Source: Verification of Nuclear Disarmament: A Presentation by the United Kingdom, UK Working Paper Verification of Nuclear Disarmament, 2003.

The two diagrams on “nuclear warhead: chain of custody” and “nuclear warhead lifecycle” demonstrate, dealing with transparency and verification of nuclear warhead dismantlement and elimination are complex and involved procedures, cloaked in secrecy and protection of confidential information. Devising workable, credible, scientifically sound and cost-effective verification procedures are likely to be time-consuming and extensive exercises. Few States have the requisite scientific and technological capabilities to contribute to monitoring and verification of nuclear warhead dismantlement, and the only true measure of nuclear disarmament is dismantlement and elimination of nuclear warheads.

³⁴ Office of Nonproliferation and Arms Control (NPAC) and Ministry of Defence, *Joint US-UK Report on Technical Cooperation for Arms Control*, http://nnsa.energy.gov/sites/default/files/Joint_USUK_Report_FINAL.PDF.

Nuclear Warhead Lifecycle



Source: US DoE, NNSA, *Office of Nonproliferation Research and Engineering, Technology R&D for Arms Control*, Spring 2001.

On 4 December 2014, US Under Secretary of State for Arms Control and International Security Rose Gottemoeller announced a new initiative to develop the tools and technologies in the quest to reduce and eliminate nuclear weapons – the International Partnership for Nuclear Disarmament Verification (IPNDV)³⁵ to channel expertise from both nuclear-weapon and non-nuclear weapon States to address the complex challenges involved in the verification of nuclear disarmament. Following the inaugural meeting in March 2015 in Washington, the 29 countries and the EU in the Partnership agreed to form three working groups to inform closer study on verification issues that exist at all stages of the nuclear weapons lifecycle. to build capacity and explore solutions to fundamental nuclear monitoring and verification challenges:

³⁵ US Department of State, International Partnership for Nuclear Disarmament Verification (IPNDV), <http://www.state.gov/t/avc/ipndv/>.

- Working Group One: “Monitoring and Verification Objectives,” chaired by Emanuele Faruggia of Italy and Piet de Klerk of the Netherlands will consider objectives for different phases of weapons elimination, the types of information and criteria needed to determine whether those objectives are being met, and the specific areas of expertise and resources required to support future work.
- Working Group Two: “On-Site Inspections,” chaired by Rob Floyd of Australia and Marek Sobotka of Poland, will draw lessons from existing on-site inspection regimes and assess the applicability of fundamental on-site inspection principles to possible future verification efforts. The group will explore the knowledge and training inspectors and staff might require to do their jobs effectively and to manage on-site inspections to ensure they provide effective verification and monitoring while meeting national security and non-proliferation requirements.
- Working Group Three: “Technical Challenges and Solutions,” chaired by Jens Wirstam of Sweden and Kurt Simeon of the US, will work to identify practical solutions to technical challenges related to nuclear warhead verification, including methods for nuclear warhead authentication, establishing and maintaining chain of custody, and authenticating necessary data and equipment. The group will survey existing efforts and technology and consider how parties can approach and overcome these challenges without revealing proliferation-sensitive information.

It is noteworthy that the chairs of the working groups all come from States that are parties to nuclear-armed alliances or defence arrangements, except for Sweden, and there is no representation from the global South. While all these are worthwhile exercises, given the enormous technical and security challenges of designing a credible and robust verification regime of nuclear warhead dismantlement and elimination it is likely that many years will elapse before the problems can be resolved – if at all. The protracted negotiations on the verification regimes of the Chemical Weapons Convention and the Comprehensive Nuclear-Test-Ban Treaty should be instructive in this regard. In my view, the practical way forward would be for each of the nine nuclear-armed States to follow the South Africa model – dismantle their own nuclear warheads and make available records for international verification, and place nuclear material from dismantled warheads under international monitoring and verification – while this is not an ideal solution, let not the good be the enemy of the best.

Nuclear Risk Reduction

5. *What mechanisms should be put in place to provide assurance for reliable, safe and secure control over nuclear weapons, and how would such mechanisms reduce the risk of accidental, mistaken, unauthorized or intentional nuclear weapon detonations?*

Reducing the risks created by nuclear weapons has been high on the global agenda for decades. These risks include, but are not limited to, accidental detonation whether by accident or design, systems failure, political or military miscalculation or adventurousness, or terrorist use. In recognition of the risk of accidental launch of nuclear weapons, the US and the USSR set up the “Presidential hot line” in 1963 in the aftermath of the October 1962 “Cuban missile crisis”.

The concept of “Nuclear Risk Reduction” was first proposed by a working group co-sponsored by US Senators Sam Nunn and John Warner in the mid-1980s that envisaged the creation of Nuclear Risk Reduction Centres as a means of lessening Cold war tensions between the US and the USSR. This concept of risk reduction was discussed at the November 1985 Geneva Summit between US President Ronald Reagan and USSR General Secretary Mikhail Gorbachev. The “Nunn-Warner Working Group” concept was further developed in late 1985 and 1986 in meetings between US and Soviet experts. On 15 September 1987, US Secretary of State George Shultz and USSR Foreign Minister Eduard Shevardnadze signed the NRRC Agreement signed in Washington. The two NRRCs established the first direct communications link between the two capitals since the hot line. The NRRC Agreement established the exchange of ballistic missile launch notifications, and under the 1987 Intermediate-Range Nuclear Forces (INF) Treaty the NRRCs also were tasked to exchange INF messages related to inspections, eliminations and conversion activities, and a comprehensive database.³⁶

Cooperation between Russia and the US to deal with the so-called Y2K problem, or Millennium Bug, led to the setting up of the Joint Strategic Stability Centre at Peterson Air Force Base in Colorado during the Year 2000 transition period.³⁷ This was followed in June 2000 to a Memorandum of Agreement Between the United States of America and the Russian Federation on the Establishment of a Joint Center for the Exchange of Data from Early Warning Systems and Notifications of Missile Launches (JDEC MOA), to minimize the consequences of a false missile attack warning and to prevent the possibility of a missile launch caused by such false warning.³⁸

It would be advisable to consider the feasibility of establishing Global Nuclear Risk Reduction and Strategic Stability Centres with the participation of the nuclear-armed States to reduce the risks and dangers associated with nuclear weapons. If Centres of Excellence can be established to strengthen security of civilian nuclear materials, it stands to reason that serious consideration be given to risk reduction and strategic stability centres to increase security of nuclear weapon systems pending their dismantlement and elimination.

³⁶ See, History of the NRRC, <http://www.state.gov/t/avc/nrrc/c26272.htm>.

³⁷ <http://www.nytimes.com/1999/10/28/world/us-and-russia-agree-on-joint-defense-against-y2k-debacles.html>.

³⁸ <http://www.state.gov/t/isn/4799.htm>.



De-alerting

Despite the end of the Cold War a quarter of a century ago, many hundreds of nuclear weapons remain on ready to launch, high alert, status deployed on land-based and sea-based intercontinental ballistic missiles. The recent international conferences on the humanitarian consequences of nuclear weapons in 2013 and 2014 have highlighted the near misses during the Cold War when luckily near weapons launches were averted. For example, a 29 April 2014 report by the Royal Institute for International Affairs (Chatham House) entitled “Too Close for Comfort: Cases of Near Nuclear Use and Policies for Today”, described 16 incidents in which there was a higher than expected probability of nuclear weapons launch due to human or systems error, accident or misjudgement.³⁹ The principal finding of the Chatham House report was that the probability of inadvertent launch of nuclear weapons is not zero and in reality is higher than generally believed and the risks of nuclear weapons deployment remain unacceptably high.

With regard to reducing the risks posed by nuclear weapons, I would like to commend to this Open-Ended Working Group the “Global Zero Commission on Nuclear Risk Reduction Report: De-Alerting and Stabilizing the World’s Nuclear Force Postures”⁴⁰ that was launched and presented during the 2015 NPT Review Conference. The Global Zero Commission was chaired by the former U.S. Vice Chairman of the Joint Chiefs of Staff General James Cartwright and included some 30 diplomatic and military experts, drawn from nearly all of the nine States currently deploying nuclear weapons; supported by more than 75 former national security experts and military commanders, as well as senior political officials.

The Global Zero Commission made a compelling case for terminating the Cold War-era practice of keeping nuclear weapons on “hair-trigger” alert or ready to launch status. It recommended: first, that an agreement between the US and the Russian Federation to immediately eliminate “launch-on-warning” from their operational strategy along with a phased stand down of high-alert strategic forces, starting with removal of 20% of each country’s nuclear forces off launch-ready alert within one year and the remaining 80% within 10 years; and, second, a longer-term global agreement for all nuclear-armed States to refrain from placing any nuclear forces on high alert. The Commission noted that an international “de-alerting” agreement could greatly mitigate the manifold risks of nuclear weapons launch, including from computer error,

³⁹ See, the Royal Institute for International Affairs, “Too Close for Comfort: Cases of Near Nuclear Use and Policies for Today”, London, 29 April 2014, <https://www.chathamhouse.org/news/2014-04-29-nuclear-near-misses-too-close-comfort#sthash.wLQitI4B.dpuf>.

⁴⁰ Global Zero, “Global Zero Commission on Nuclear Risk Reduction Report: De-Alerting and Stabilizing the World’s Nuclear Force Postures”, http://www.globalzero.org/files/global_zero_commission_on_nuclear_risk_reduction_report.pdf.

cyber-attack, accidental release, unauthorized “insider” launch, false warning of enemy attack and crisis nuclear decision-making.

The Global Zero Commission recommended that all nuclear-armed States put in place policies that ensure the highest priority for survivable nuclear forces and associated command systems to reduce dependence on early launch, launch on warning, or “use or lose” strategies. And that all non-survivable or vulnerable nuclear forces should be eliminated during force modernization and through arms reduction negotiations whenever possible. It is regrettable in my view that at least five of the nine nuclear-armed States are modernizing their nuclear forces, without reducing dependence on high-alert systems or are going for nuclear forces that lower the threshold for use including for systems that blur the operational differences between nuclear and conventional weapons.

There is insufficient time here today to detail all of the recommendations of the Global Zero Commission, however, a few of the salient ones are as follows for implementation by the Russian Federation and the US:

1. Fleet ballistic missile submarines (SSBNs), for the most part the invisible nuclear forces of the two major nuclear powers, remain the most secretive in terms of their operations. The Commission recommended that both Russia and the US notify each other whenever their strategic missile submarines depart their homeports to go on patrols and to refrain from deployment at forward locations that would shorten the flight times of their nuclear-armed missiles to reach the territory of the other side in less than 30 minutes;
2. Reformulate nuclear war plans (Emergency War Orders, or EWO) to eliminate launch-on-warning procedures;
3. Implement a specific phased plan to decrease the attack readiness of individual legs of strategic nuclear forces to 24-72 hours (time required to re-alert) until a total stand-down can be achieved over a period of approximately ten years under a fast-track option;
4. Exchange data on warheads of non-strategic systems destroyed since the 1987 INF Treaty, confidence-building visits to former air force and naval storage sites to ensure that non-strategic nuclear weapon systems (NSNW) are not available for quick re-deployment, exchange information on current locations and types and numbers of NSNWs, transparency on NSNW modernization plans, separate NSNW warheads from delivery vehicles and keep them demated, and transfer NSNWs to centralized storage sites;
5. Exchange declarations on missile defence programmes; and
6. Russian and US experts to work jointly to design, test, demonstrate, and validate de-alerting methods and associated verification procedures; to compare and share assessments of the risks posed by their current strategic postures, including the cyber risks to the integrity of nuclear command, control, communications and early warning networks; to jointly assess the

risks of the nuclear forces programmes of other nuclear-armed States and propose remedies including confidence-building measures and de-alerting.

In addition, the Global Zero Commission also suggested some multilateral risk reduction measures:

1. The nuclear-armed States to initiate consultations amongst themselves to lay the groundwork for a multilateral agreement limiting the alert status of their nuclear forces;
2. France, Russian Federation, the United Kingdom and the United States to discuss and share information on their alert status, plans for de-alerting, approach to verification and monitoring technologies;
3. The Russian Federation and the US to discuss de-alerting concepts with China, India and Pakistan, with a view to securing their participation and support for global de-alerting consultations and subsequent negotiations on a multilateral de-alerting agreement.
4. Reaffirmation by NATO of three nuclear “NOs” – (“no intention, no plan and no reason to deploy nuclear weapons on the territory of new member States”) predicated on Russia committing not to deploy nuclear weapons to new locations in European Russia.
5. India and Pakistan to revitalize talks on measures to improve security of nuclear forces to prevent accidental or unauthorized launch, develop modalities for information sharing on nuclear doctrine, improve and enhance crisis communications capabilities, agree not to attack strategic national command centres, set up a strategic risk management unit, and further strengthen the safety and security of nuclear weapons during storage, transportation and handling.
6. Though the Global Zero Commission was silent on the DPRK and Israel, I would propose that the US engage separately with the DPRK and Israel on nuclear weapon security and alert practices with the objective of bringing these two States respectively to denuclearization in their respective regions as part of regional arrangements.

Conclusion: A Plan of Action

In conclusion, it is important to reiterate the necessity of minimizing the risks from nuclear weapons, reducing the high-alert status of ready-to-launch nuclear weapons, establishing risk reduction and strategic stability centres, increasing transparency and accountability for weapon-usable nuclear materials, promoting intelligent involved discourse between nuclear-weapon and non-nuclear-weapon States, and using the strengthened review process of the NPT to its full potential, among other actions. Of course, there are several other important measures that would contribute to nuclear risk reduction and disarmament, such as eliminating nuclear warheads and delivery systems for sub-strategic and battlefield nuclear weapons, establishing additional nuclear-

weapon-free zones, withdrawing all nuclear weapons stationed outside the national territory of nuclear-weapon States, and multilateralizing nuclear disarmament negotiations, among other measures.

With regard to transparency and risk reduction concerning nuclear weapons, here is a decalogue of questions that should be put to the nuclear-armed States:

1. What are the human health and environmental consequences of nuclear-weapon development / testing programmes since inception?
2. What are the fail-safe mechanisms for dealing with false alarms and safety/security system failures, as well as back-up systems and their reliability under stress conditions?
3. What mechanisms are in place to prevent accidental detonation of nuclear weapons in deployed and storage modes, including the human health and environmental remediation procedures and infrastructure?
4. What is the record of system breakdowns and normal accidents of nuclear weapon systems?
5. What are the design basis threat assumptions/calculations of catastrophic, unplanned, force majeure or force of nature events with regard to nuclear weapons safety and security?
6. What are the viable processes to achieve the disarmament and elimination of nuclear weapons, including the safe/secure disposition of related weapon-usable nuclear materials, and the time frame for doing so?
7. What scenarios have been considered for regional / global food security, human health, psychological and critical infrastructure implications of any detonation of nuclear weapons?
8. What public education efforts have been implemented with regard to the dangers and risks of nuclear weapons and nuclear doctrines?
9. When do the leaders of the nuclear-armed States plan to convene a global summit, along the lines of the Nuclear Security Summits, to address issues of nuclear disarmament?
10. When can the international community expect the nuclear-armed States to support or join the 'Humanitarian Initiative on Nuclear Weapons'?

To end, allow me to suggest a “plan of action” that will raise the political cost of association with nuclear weapons. Five nuclear-weapon-free zone (NWFZ) treaties are in force covering some 110 States, as well as Mongolia, and 184 non-nuclear-weapon States (NNWS) are party to the NPT – taking away the NNWS party to nuclear-armed alliances and defence arrangements – we have some 150 NNWS that base their security on means other than nuclear-weapons. These some 150 States have the responsibility to take determined actions to promote nuclear disarmament and elimination of nuclear weapons by utilizing all the diplomatic levers in their possession – to date, they have not done so, rather they continue to engage in well-intentioned but results-deficient discourse at NPT review meetings and at other fora. Let me suggest a practical action agenda for these States:

- Take individual and or collective decisions at the level of Heads of State and Government, and Foreign Ministers, to:
 1. Only support NPT NNWS for membership in the United Nations Security Council that are not party to nuclear-armed alliances and defence arrangements buttressed by nuclear weapons and also do not host nuclear weapons on their territory, and that have demonstrated tangible support for achieving a world without nuclear weapons;
 2. Only support candidates for the position of the Secretary-General of the United Nations, the Director General of the IAEA and the Director General of the OPCW, and even other international organizations, that are nationals of NPT NNWS that are not party to nuclear-armed alliances and defence arrangements and that also do not host nuclear weapons on their territory, and that have demonstrated tangible support for achieving a world without nuclear weapons;
 3. NNWS that fulfill the above-mentioned criteria when serving on the Security Council must commit to support Chapter VII resolutions on non-proliferation or disarmament only when such resolutions include parallel obligations on the permanent members of the Security Council to demonstrate tangible irreversible progress on nuclear disarmament.

We need a radical paradigm shift. The international system of today is still based on the premises of a world that existed in 1945 when the United Nations formally came into being – the five nuclear-weapon States occupy the permanent seats and each has a veto; many of the governing structures of international organizations bear the hallmarks of a colonial world that ceased to exist nearly half-a-century ago – today, the majority of States are in the developing world, the global South, and they are structurally disenfranchised – for example, in the 35-seat IAEA Board of Governors,



some 20 seats are controlled or influenced by Western countries, a built-in majority, and similar discrepancy persists in the Security Council.

Furthermore, the 150 or so NNWS I referred to above continue to passively accept the argument tendered on behalf of the NATO NNWS that host nuclear weapons on their territories that such deployment was “grandfathered” when the NPT opened for signature. Tenuous as that argument might be, it challenges common sense that the 150+ NNWS docilely continue to buy this argument – even if one accepts that “stationed nuclear weapons” were grandfathered in 1968, there is no reason at all that such grandfathering continue in perpetuity. The NNWS should refuse to accept this situation and starting with the first PrepCom for the 2020 NPT Review Conference, to be held in Vienna next year, call for the removal of all stationed nuclear weapons failing which the host States should be declared in material violation of Articles I and II, and this issue also could be taken up at the IAEA General Conference and Board of Governors in the context of compliance with comprehensive safeguards agreements pursuant to the NPT.

But, Chairman, I despair – I sense a lack of leadership, a lack of motivation, a lack of political will, and crushing bureaucratic inertia for these 150+ NNWS that prevents them to rise to the challenge, and in reflecting the views of more than half of the world’s population, to take practical steps to put pressure on the NWS and their close allies in ways that can change the balance of diplomatic power in their favour and thus serve the global interest. What a pity!

I end on that sombre and pessimistic note!

Thank you for your attention.



A/AC.286/WP.3

Objectives

This panel will focus on operative paragraph 3 (United Nations General Assembly resolution 70/33, entitled “Taking forward multilateral disarmament negotiations”). It aims to address other measures that could contribute to taking forward multilateral nuclear disarmament negotiations, including but not limited to:

- (a) transparency measures related to the risks associated with existing nuclear weapons;
- (b) measures to reduce and eliminate the risk of accidental, mistaken, unauthorized or intentional nuclear weapon detonations; and
- (c) additional measures to increase awareness and understanding of the complexity of and interrelationship between the wide range of humanitarian consequences that would result from any nuclear detonation.

Guiding questions from the OEWG Chair

1. What are the challenges facing global nuclear weapon governance and how can it be strengthened?
2. What are the risks associated with nuclear weapons? What transparency measures exist, and how should they be supplemented?
3. How can compliance with transparency measures be achieved and completeness of information verified?
4. How can transparency measures be strengthened to help assess and reduce the risk of accidental, mistaken, unauthorized or intentional nuclear weapon detonations?
5. What mechanisms should be put in place to provide assurance for reliable, safe and secure control over nuclear weapons, and how would such mechanisms reduce the risk of accidental, mistaken, unauthorized or intentional nuclear weapon detonations?
6. What role could nuclear weapons States play in providing positive security assurances to non-nuclear weapon States, and in mitigating the possible devastating humanitarian impact and aftermath of a nuclear weapon detonation event in non-nuclear weapon States?