

FINAL TECHNICAL REPORT

# CSIS Track-II Dialogue on Limiting Non-Strategic Nuclear Weapons

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# CSIS Track-II Dialogue on Limiting Non-Strategic Nuclear Weapons

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## Summary

The CSIS Proliferation Prevention Program successfully concluded its PASCC Grant N00244-14-1-0034 on September 4, 2015 with a roll-out event reporting on the results of the Track II Dialogue on Limiting Non-Strategic Nuclear Weapons (NSNW). PPP hosted the first Track II dialogue in Vienna, Austria in October 2014, and a second Track II dialogue in Washington, D.C. in June 2015. The first session, in which 7 Russian, 1 European and 10 U.S. experts participated, produced a set of topics for potential collaboration. A similar group (6 Russians, 2 Europeans and 12 U.S. experts) met in Washington, D.C. at CSIS headquarters and recommended specific action items. The specific details are found in the attached individual workshop reports). Following each session, senior fellow Sharon Squassoni briefed U.S. government officials on the results.

Although Russia's annexation of Crimea in March 2014 and official allegations of INF Treaty violations created significantly more tension in the discussions than originally anticipated, the shutdown of most avenues for discussion (such as the NATO-Russia Council) made this Track II effort even more important. Although the original work plan envisaged drafting the text of an actual agreement, it was obvious before the first meeting in October that that kind of progress would not be possible. Instead, the parties focused on political and technical confidence-building measures over the course of two sessions, while still discussing important issues like definitions, verification challenges, and scope.

## **PASCC Quarterly Progress Report 1 October 2014 (ending Sept. 30, 2014)**

### Project Execution

In the first quarter, CSIS completed all the relevant milestones for the first Track II workshop on Non-Strategic Nuclear Weapons, inviting participants to the first workshop, assigning discussion papers, reviewing them, and disseminating them to participants. CSIS also reviewed draft briefing slides from the four speakers, who were Jeffrey McCausland, Nancy Jo Nicholas, Eugene Miasnikov, and Evgeny Buzhinsky. The milestones for the next quarter include drafting the conference report from the first workshop in Vienna, circulating it among participants, revising and then posting it on the CSIS website.

Scheduling conflicts did not allow all the proposed invitees to participate in the Track II dialogue (e.g., Arbatov, Khlopkov, Orlov, Topychkanov, Zagorski, Brooks, and Hoffman). CSIS secured additional Russian participants (Eugene Miasnikov and Sergey Utkin). Other European and NATO experts subsequently invited included Oliver Meier, Guy Roberts, and Steven Pifer. In light of Amy Gordon's conflicting commitments, CSIS opted to commission two additional discussion papers for the meeting and engage Jeffrey McCausland as a consultant. CSIS requested approval from NPS to shift funds slightly to accommodate this change.

**Key achievements:** The October dialogue established a baseline understanding of key issues related to NSNW, including the current role of NSNW for the United States, Europe and Russia and the role of monitoring associated with unilateral withdrawals or confidence-building measures (CBMs). Participants in the workshop expressed their appreciation for the productive and valuable dialogue, and expressed interest in the follow-up workshop.

### Financial Reporting

Total PASCC Project Funding	212,986\$
Balance as of [end of quarter]	181,761\$

Actual costs have largely been in line with the proposal budget, with the exception of consultant and honoraria costs. This is because Amy Gordon was not available for consulting. In addition to his honoraria, CSIS paid Jeffrey McCausland a consulting fee for guidance that he provided on the project. Finally, two additional discussion papers are planned for the June workshop, which will increase honoraria costs. CSIS will manage the difference by using the extra funding from not hiring a consultant to cover the additional costs.

**PASCC Quarterly Progress Report 2**  
**January 2015 (ending December 31, 2014)**

Project Execution

CSIS held the first Track II workshop on Non-Strategic Nuclear Weapons on October 6<sup>th</sup> and 7<sup>th</sup> at the Vienna Center for Disarmament and Nonproliferation in Vienna, Austria. From the workshop proceedings, CSIS drafted the conference report, circulated it to participants for their review, and [posted it](#) on the CSIS website. Following its publication, CSIS included the report as a part of its quarterly e-mail update to its global mailing list. CSIS also secured the date and location of the follow-up Track II workshop on Non-Strategic Nuclear Weapons, which will be held at CSIS headquarters on June 4-5<sup>th</sup>, 2015.

CSIS will draft a preliminary agenda, invitations, and a working background document outlining the key topics of discussion for the second Track-II workshop, and will circulate those among workshop participants. CSIS will also identify the authors of discussion papers for the second workshop. CSIS will also seek to secure additional Russian participants (Alexei Arbatov, Anton Khlopkov, Andrei Zagorski, Sergei Rogov), as well as additional American participants for the second workshop in Washington, D.C.

**Problems encountered:** In light of Russia’s annexation of Crimea and alleged violations of the Intermediate-Range Nuclear Forces Treaty, CSIS is evaluating how to best implement the second dialogue. The original plan to develop a verification approach for non-strategic nuclear weapons may no longer be useful. CSIS is exploring other approaches that could yield fruitful dialogue on non-strategic nuclear weapons, including building trust between the United States and Russia and/or a focus on broader principles that could guide a verification approach.

**Key achievements:** The dialogue established a baseline understanding of key issues related to NSNW, including the current role of NSNW for the United States, Europe and Russia and the role of monitoring associated with unilateral withdrawals or confidence-building measures (CBMs). Participants in the workshop expressed their appreciation for the productive and valuable dialogue, and their interest in the follow-up workshop. CSIS published the first conference report after circulating it for review among workshop participants.

Financial Reporting

Total PASCC Project Funding	212,986\$
Balance as of [end of quarter]	108,922\$

Conference costs in Vienna were slightly higher than anticipated because of the need for simultaneous interpretation on technical nuclear issues. However, CSIS managed these costs by securing alternate funding for CSIS flights to Vienna and hosting the second workshop at CSIS headquarters.

**PASCC Quarterly Progress Report 3**  
**April 2015 (ending March 31, 2015)**

Project Execution

In the third quarter, CSIS confirmed the date and location of the second Track II workshop and invited additional U.S. and Russian participants. Additional U.S. invitees include David Hoffman, James Fuller, Jeffrey Mankoff, and Paul Schwartz. Additional Russian invitees include Petr Topychkanov, Vladimir Orlov, and Victor Esin. CSIS drafted a preliminary agenda, invitations, and a working background document outlining the key topics of discussion for the second Track-II workshop. These will be circulated among workshop participants in advance of the conference. CSIS has identified the discussion leaders for the second workshop.

Two weeks before the second workshop, CSIS will circulate all the materials for the meeting. Following the workshop, CSIS will draft the second conference report and circulate it among participants for their review. This report will then be posted on the CSIS website and included as part of the CSIS quarterly e-mail update to its mailing list.

**Problems encountered:** Due to recent turmoil in the U.S.-Russian relationship over Ukraine and alleged violations of the Intermediate-Range Nuclear Forces Treaty, CSIS has decided not to pursue very specific discussions on a verification approach for non-strategic nuclear weapons, but to build on the recommendations from the October workshop in four areas: military doctrinal issues, transparency mechanisms and approaches, developments in verification technology, and safety and security collaboration.

**Course alterations:** Instead of drafting a verification approach, CSIS will collect and disseminate discussion papers on a broader scope of issues regarding NSNW.

**Key achievements:** Virtually all of the participants in the first workshop are ready to participate and contribute to the second workshop.

Outreach and USG Communication

CSIS consulted with Rose Gottemoeller on April 21, 2015 about the project and its results.

Financial Reporting

Total PASCC Project Funding	212,986\$
Balance as of [end of quarter]	100,667\$

Actual costs are in line with the proposal budget, with the exception of consultant and honoraria costs since Amy Gordon was not available for consulting. Instead of procuring two discussion papers for the June workshop as mentioned in the prior update, CSIS will seek a broader scope of discussion papers and discussion leaders, which will increase honoraria costs. CSIS will manage this difference by using the extra funding from not hiring a consultant.

**PASCC Quarterly Progress Report 4  
July 2015 (ending June 30, 2015)**

Project Execution

In the third quarter, CSIS held the second Track II workshop on Non-Strategic Nuclear Weapons at CSIS headquarters on June 4-5<sup>th</sup>, 2015. A workshop report was circulated to all participants. After incorporating comments from participants, CSIS will post the report on the CSIS website, include a link in the PPP quarterly program update email. CSIS will hold a roll-out event summarizing the results of the workshop in early September 2015.

**Key achievements:** The participants identified specific measures for follow-up during the one and one-half days of discussion, all of which are incorporated in the final workshop report.

Outreach and USG Communication

Assistant Secretary of State for Arms Control & Verification Frank Rose gave the luncheon address at the workshop and DOE/NNSA's Greg Dwyer gave the dinner address. A copy of the workshop report was sent to these two and Rose Gottemoeller.

Financial Reporting

Total PASCC Project Funding	\$212,986
Balance as of June 30, 2015	\$41,526

Actual costs are in line with the proposal budget. There are still some travel expenses outstanding as well as honoraria costs. CSIS anticipates spending budgeted funds for the roll-out event, although these costs will be minimal.

## Washington Workshop Summary

June 4-5, 2015

On June 4 and 5, 2015, the Proliferation Prevention Program of the Center for Strategic & International Studies hosted U.S., European and Russian experts at a closed workshop entitled, “Track-II Dialogue on Limiting Non-Strategic Nuclear Weapons.” Appendix A contains the agenda and list of participants. The workshop was the second of two dialogues that aimed to analyze the core issues regarding potential future limits on non-strategic nuclear weapons, including verification, transparency, and confidence-building measures.

At the first workshop held in Vienna, Austria in October 2014, experts identified four baskets of issues where further collaboration would be useful: military doctrinal talks, specific transparency measures, development of verification technology and the safety and security of non-strategic nuclear weapons (NSNW). Participants further identified specific ideas in those baskets which became the focus of discussion at the Washington workshop (see Appendix B). Given the shrinking opportunities for official dialogue on nuclear weapons issues, participants also focused on identifying discussion topics for future Track-II dialogues. They agreed that the opportunity to discuss these issues has a renewed value in the current political environment.

Against the backdrop of the crisis in Ukraine, disputes regarding the Intermediate-Range Nuclear Forces (INF) Treaty and ballistic missile defense (BMD), sanctions on Russia and increasingly negative media coverage of West-Russia relations, experts agreed that:

- The United States and Russia need a new basis for collaboration and transparency, given that tensions are as high as they were during some of the darkest years of the Cold War.
  - The need to reduce risks of unintended escalation, through increased attention to transparency and confidence-building measures regarding military exercises, crisis communications, crisis management, and agreed rules of military conduct when military forces of one side operate in proximity to military forces of the other, was a common thread of discussion.
  - A whole new generation of officers, officials and political leaders needs education in “nuclear messaging.” They also need to be re-educated on the benefits of maintaining a dialogue on arms control in times of increased tension so that cooperation on the crucial issue of nuclear security is not held hostage to fluctuations in the overall relationship.
- Transparency measures are needed to “debunk” myths and soothe irritants in the relationship. For example:
  - Military doctrinal talks could help at the government level to build confidence through enhanced transparency and improved understanding.
    - U.S. participants called for clarification of the status and relevance of the Russian policy of “de-escalation” (i.e., use of non-strategic nuclear weapons in a conventional conflict to de-escalate the conflict).

- Russian participants called for explanations of “countervailing” measures that the U.S. is considering in response to Russian violation of the INF Treaty.
- Nonetheless, for real progress, there needs to be a political umbrella under which to organize such efforts. Establishment of that umbrella would likely require an improvement in the broader political atmospherics.

In particular, some short-term actions are critically needed to ease tensions. Participants recommended that:

1. U.S., NATO and Russian military officers and policy makers should meet to review implementation of current agreements designed to avoid misunderstandings and unintended crises, such as the Incidents at Sea agreement.
2. Governments should seek to expand the Vienna Document’s confidence-building measures to include exchanges of information regarding non-strategic nuclear weapons, high-precision conventional weapons and air and missile defense.
3. Russian experts should publish articles on the concept of de-escalation, how it would operate and whether or not it is part of official Russian doctrine.
4. In order to remove potential disagreements with respect to the INF Treaty, the U.S. government should consider transparency measures to demonstrate that the MK-41 missile launcher for Aegis Ashore SM-3 missile interceptors cannot contain or launch “offensive” surface-to-surface missiles.
5. NATO and Russian governments should reconvene joint activities regarding the safety and security of nuclear weapons or exchange such collaboration to include an exchange of best practices
6. The U.S. and Russia should consider reconvening the Special Verification Commission under the INF Treaty for formal consideration of allegations of treaty violations.

Over a longer horizon, many of the activities that were conducted usefully by the NATO-Russia Council should resume, including military-to-military exchanges on avoiding misunderstandings. Participants also recommended resuming U.S.-Russian activities related to developing better technologies for verification, and recommended a new review of classification issues regarding nuclear warheads.

### **Military Doctrinal Issues**

*Discussion leaders: Dr. Jeffrey McCausland, Distinguished Visiting Professor of Research and Minerva Chairholder at the Strategic Studies Institute, U.S. Army War College; Lt. Gen (ret) Evgeny Buzhinsky, Chairman of the Executive Board at the PIR Center; Dr. Guy Roberts, former Deputy Assistant Secretary General for Weapons of Mass Destruction in NATO*

Dr. McCausland explored some of the basic differences between U.S. and Russian military doctrine, defining U.S. military doctrine as “principles that guide the employment of U.S. military forces in coordinated action toward a common objective,” compared to Russia’s broader approach to doctrine as essentially a national military strategy. Dr. McCausland stressed both nations’ interest in stability as a common ground for resuming official discussions and for

continuing Track-II talks, and suggested improving the Vienna Document and Open Skies Treaty as well as the Incidents at Sea and similar agreements.

Gen. Buzhinsky focused on the evolution of the roles of non-strategic nuclear weapons in military doctrine. He emphasized the two primary roles of nuclear weapons in Russian military doctrine: “in response to the use of nuclear weapons or other weapons of mass destruction (WMD) against Russia or its allies” and “in response to aggression [against Russia] with the use of conventional weapons in case the existence of the State is under threat.” Buzhinsky disputed any role for the use of nuclear weapons in a “de-escalation” effort in a conflict with a nuclear-armed state or alliance, emphasizing that this term is not used in official Russian military documents. Gen. Buzhinsky stressed that, unlike the United States, Russia does not consider using nuclear weapons to protect its allies in a conventional conflict.

Calling the development of high-precision weapons and Prompt Global Strike (PGS) by the U.S. and its allies the biggest concern for Russia and its military, Gen. Buzhinsky stressed the importance of NSNW in maintaining Russia’s security. Gen. Buzhinsky described this reality as problematic for negotiating future reductions in NSNW, especially considering the various threats Russia faces due to its size, length of borders, and hostile neighbors. In particular, Russia sees NSNW as “an instrument to neutralize NATO superiority in general-purpose forces,” an approach similar to that adopted by NATO in the past.

Dr. Roberts focused on NATO’s Strategic Concept as the guide for NATO’s military posture. The three “core tasks” of the Strategic Concept are collective defense, cooperative security, and crisis management. In that context, land-based nuclear weapons in Europe are considered by NATO as a critical element in the overall deterrence posture to preserve peace and to prevent war or any kind of coercion. The 2012 Defense and Deterrence Posture Review stated that all allies share “risk and responsibility” in nuclear deterrence, hence the “nuclear sharing arrangements” that place nuclear weapons in European territories, and the “consultative arrangements” between the U.S. and NATO, both of which demonstrate the important collective roles that members of NATO have in maintaining a strong deterrence posture.

According to Dr. Roberts, the rise of conventional capabilities in NATO has not eliminated the need for a nuclear deterrent, and therefore nuclear weapons will remain an integral part of NATO’s overall defense posture. Dr. Roberts suggested there should be no reduction of nuclear stockpiles in NATO unless accompanied by reciprocity from Russia, and suggested that NATO seek as a first step that Russia withdraw its NSNW away from the NATO-Russia border.

Participants discussed their concern with the increase of serious incidents involving U.S., Russian and NATO militaries in and over the Baltic and Black Seas. Some of these incidents involved aircraft and ships, including the flight by a Russian pilot over a U.S. destroyer last year, something that President Putin had later criticized. Since the Ukraine crisis began, almost 40 potentially dangerous incidents involving Russian and Western militaries have been documented (according to the European Leadership Network). Participants agreed about the need “to get serious” about the Incidents at Sea agreement (dating from 1972) but also noted that it is limited in its applications. Russian participants discussed their experience trying to conclude an agreement between Russia and NATO on submarine rescue after the Kursk submarine accident,

only to be told by NATO authorities that Russia would have to conclude bilateral agreements with individual countries and an umbrella agreement with NATO. (Countries “release” their national assets to NATO operations.) In the week following the workshop, U.S. and Russian naval officers (Vice-Admiral Oleg Burtsev and Rear Admiral John Nowell) met in Naples to discuss exactly this. Participants suggested however that the discussions should include not just the U.S. and Russian naval staffs, but all services and NATO as well.

On de-escalation, U.S. participants suggested that most American experts (including those with long government experience and those within the U.S. government itself) have accepted as conventional wisdom that Russian doctrine calls for escalation to nuclear weapons use in order to keep a conflict from escalating. In fact, some participants saw little difference between this concept and NATO’s “flexible response” doctrine of the 1970s and 1980s. Some U.S. participants suggested the recent Russian military simulation regarding an invasion of Kaliningrad as evidence that Russian military experts are considering the use of tactical nuclear weapons to defend against such an invasion. Indications that such weapons could be used in the context of a potential conflict in Kaliningrad raised questions of whether Russia’s actual threshold for use of nuclear weapons was something lower than cases in which the very existence of the Russia state was at risk. Russian participants reiterated that de-escalation is not a part of official military doctrine, although some military publications first introduced the idea about fifteen years ago. One observer suggested that there is no need for a concept of de-escalation because no nation on Russia’s border can conventionally defeat, or even threaten Russia. U.S. participants suggested that an unclassified publication on de-escalation from a credible Russian scholar could help ease the confusion on the American side.

A broader question is whether doctrine is absolute in terms of how/when/why nuclear weapons would be used. Although the decision to use nuclear weapons is political, their employment would follow doctrine. In response to a question about the type of attack that would threaten the survival of the Russian state (specifically if a conventional attack on Russian command and control by US systems and NATO would amount to such a threatening level), Russian participants suggested that the response would depend on the effectiveness of the attack. These participants made clear, though, that Russia will respond appropriately if the fate of the state is at stake.

Another question participants considered was the role of military simulations and exercises and what lessons could be drawn from them. For instance, U.S. participants asked for clarification regarding reports of coercive (rather than reactive) Russian military exercises vis-à-vis NATO. Russian participants questioned the reliability of information relating to the simulations given the generally restricted access to such simulations. Although participants disagreed on the accuracy of press reports and what could be learned from open sources, all agreed on the need for further talks to clear up misunderstandings in these substantive areas. In addition, the obvious confusion about “nuclear messaging” (especially regarding Putin’s statements and those of other officials regarding nuclear weapons and Crimea) evoked particular concern that there is a current lack of experience in processing and understanding these messages.

One of the fundamental issues regarding NSNW is how to define them: Are they defined by their purpose? By their range? By what they are not (i.e., not strategic)? Are they defined by treaties

(e.g., everything not covered by START I/New START)? One Russian expert suggested that militarily-speaking, NSNW are theater-of-war weapons. An American expert suggested that all nuclear weapons are strategic since the decision to use nuclear weapons would have to be a strategic one.

### **Transparency Benefits and Costs**

*Discussion leaders: Dr. Eugene Miasnikov, Director of the Center for Arms Control, Energy and Environmental Studies, and Dr. Sergey Rogov, Director of the Institute for the U.S. and Canadian Studies of the Russian Academy of Science.*

Dr. Miasnikov used the historical context of nuclear reductions in the early 1990s and the Presidential Nuclear Initiatives (PNI), in particular, to make three essential points regarding previous limitations on NSNW: 1) both sides agreed their nuclear arsenals at the time were excessive; 2) Russia was interested in ensuring irreversibility of the reductions, envisaged by the START treaty; and 3) Russian leaders at the time had a vision for their integration into the West. The U.S.-Russian dialogue on limiting nuclear arsenals was a means for Russia to enter into “institutions” following the fall of the Soviet Union. Transparency was essentially viewed as the price of admission for Russian integration into new institutions, and not a “new value of democracies.” Today, these conditions don’t necessarily apply, and it will be essential to find new reasons, or a new basis, for transparency measures. Russia currently does not see transparency as a plus but a concession.

Dr. Miasnikov suggested that even at their height, transparency measures did not exceed more than the PNI and lab-to-lab research work. Although Americans may view transparency as a value intrinsic to democratic societies, Russians doubt the value of transparency for national security. At worst, transparency is viewed as a Trojan horse. The recent order signed by President Putin on state secrets might severely limit the ability of Russian officials to talk about transparency measures on facilities associated with nuclear weapons.

Nonetheless, Dr. Miasnikov noted that there are some indications that Russian officials (quoting a Ministry of Defense official who said that future arms control should be based on confidence-building measures and national technical means rather than inspections) might be interested in development of remote sensing technologies. In addition, he suggested future limitations should distinguish between deployed and non-deployed warheads. Transparency about conventional weapons and sea-launched cruise missiles would also be welcomed by Russia. Finally, Dr. Miasnikov suggested the U.S. and Russia declare they will not develop new types of non-strategic nuclear weapons in order to improve the environment for discussions.

Dr. Rogov suggested that while many transparency measures are possible, the current conditions in this “new Cold War” make even discussions on transparency difficult. A potential starting point, however, is to talk about strategic stability. Defining this as a stable balance of overall military potential, including both offensive and defensive weapons, measures to improve strategic stability (such as arms control) would take into account a range of systems. Rogov identified six baskets of issues that have an impact on strategic stability: NSNW, INF, ballistic missile defenses (BMD), high precision conventional weapons, cyber and space. Rogov also identified five pillars upon which future strategic stability could rest (see attached paper): treaty

obligations; confidence-building/transparency measures; unilateral parallel measures; cooperative security and defense (based on reciprocal political and legal commitments); and development of political and economic cooperation between Russia and the United States.

On NSNW, there are great asymmetries between the U.S. and Russian arsenals: the U.S. has one class of NSNW (air-delivered bombs), while Russia has three classes, including air defense systems, naval nuclear weapons, and short-range systems. Russian short-range, tactical nuclear weapons number about 2,000, but fewer than 500 tactical nuclear weapons could ever be used in Europe. Thus, one needs to consider which classes of NSNW are being discussed when looking at the balance of capabilities between Russia and the United States.

Dr. Rogov stressed that if we consider NSNW to be everything less than strategic, then counting the three nuclear states in NATO (the UK, France and the U.S.) would greatly diminish Russia's perceived "superiority." Dr. Rogov argued for inclusion of French and British forces in any negotiation on NSNW reductions. Nonetheless, a new treaty for Europe would be much more complicated than the old NATO/Warsaw Pact paradigm.

On INF, Dr. Rogov noted that accusations of violations from both sides were unaccompanied by real dialogue. This could put not only the INF Treaty but also arms control as a whole at risk in the very near future. Dr. Rogov concluded by voicing a concern about what Secretary of Defense Ashton Carter meant by his use of the term "countervailing measures" in discussing how the U.S. will respond to Russia's INF Treaty violation. He interpreted this as meaning a prevailing strike capability, something he considers very worrisome.

Participants explored the dilemmas of definitions. Oversimplifying was dangerous, given the tremendous variety of nuclear-tipped weapons possessed by the U.S. and Russia. During SALT I negotiations, the U.S. defined strategic weapons basically as all intercontinental weapons, while Russians defined them as weapons that could hit the Russian homeland from wherever they were based. These approaches are irreconcilable: if the United States were to accept the Russian definition, U.S. systems for defense of its allies would be constrained, while Russian systems that could threaten those allies would not be constrained. Eventually, if countries move towards lower numbers of nuclear weapons, then all types of nuclear weapons must be addressed. In that case, strategic nuclear weapons could be constrained under a sub-limit within broader limits on overall weapon stockpiles.

One participant stated that New START only limits about 35-40% of U.S. and Russian nuclear arsenals, and that percentage could continue to decrease in the future. Another participant noted the reliance of treaties on counting delivery vehicles rather than warheads, although New START counts both deployed delivery vehicles and deployed warheads (albeit with a discount for bomber weapons).

Russian participants questioned what levels of transparency on military matters would be acceptable for both Russia and the United States. U.S. participants countered that this is a political issue. Participants discussed possible transparency on missile defense capabilities, aimed at demonstrating the "technical differences" that make the MK-41 launcher unable to launch cruise missiles. Such intrusive steps would be important for verifying new limits and

providing confidence. In the words of one participant, “a return to national technical means of verification [alone] is a terribly frightening prospect for the entire international community.”

One potentially useful suggestion for transparency related to the current conflict in Ukraine was to focus on exercises of crisis communication and agreed codes of military conduct, as both of these will have immediate benefits and reduce the likelihood of unintended escalation. Classification of information presents an issue, but past examples, such as the PNIs, show what is possible if the United States takes the lead in negotiations.

### **Technology Development**

*Discussion leaders: Dr. James Fuller, Former Director of Defense Nuclear Nonproliferation Programs at Pacific Northwest National Laboratory, and Nancy Jo Nicholas, Associate Laboratory Director at Los Alamos National Laboratory.*

Dr. Fuller opened the third session with a presentation on monitoring and verification of nuclear warheads. He noted this focus was appropriate given the dual-capability of delivery vehicles, especially for shorter ranges, and emphasized the importance of establishing a clear definition of NSNW, with “unequivocal observables and/or measureable parameters,” for establishing credible verification abilities. Fuller supported the definition of NSNW by exclusion, meaning that if the weapon is not covered by New START, then it is non-strategic.

Dr. Fuller described some accomplishments in the development of verification technologies, including: understanding different parties’ “sensitive and non-sensitive information categories,” development of attribute measurement technologies, recognition of the importance of templates, and “the need for information barrier procedures and technology for most verification technology.” Templates allow for warhead differentiation by using the high-resolution energy spectrum of the contained warhead, and these approaches are currently the only way to differentiate between types of warheads.

Some suggestions offered by Dr. Fuller that apply to verification include dismantling old facilities and designing new ones with consideration of possible future inspections, identifying signatures other than radiation for use in templates, formal investigation of methods for making secure declarations (such as hash algorithms and zero-knowledge systems) and creating a standardized, unclassified warhead test object. In addition, Dr. Fuller briefed the group on some of the recent suggestions emanating from the Nuclear Threat Initiative’s study *Innovating Verification: New Tools & New Actors to Reduce Nuclear Risks*, released in July 2014.

Ms. Nicholas presented additional ideas for collaboration on verification technology, focusing on those areas of particular interest from the Nuclear Nonproliferation Treaty (NPT) Review Conference. She suggested the U.S. and Russia revive joint development work on measurement technology, revive the Warhead Safety and Security Exchange (WSSX)<sup>1</sup>, and potentially,

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<sup>1</sup> WSSX is described by the Oak Ridge National Laboratory as an “agreement [that] allows U.S. and Russian scientists who have expertise to design and produce nuclear weapons to work together under laboratory-to-laboratory contracts to better understand and enhance the safety and security of nuclear weapon dismantlement in both countries as well as to identify new technologies to counter nuclear terrorism.”  
<http://web.ornl.gov/adm/directorates/gsd/factsheets/GS&N%20Fact%20Sheet.pdf>

collaborate in responding to concerns about the humanitarian consequences of nuclear weapons. Additional ideas included demonstrating global resilience to nuclear explosions and visit to labs to dispel myths about nuclear weapons and reassure allies. The U.S. and Russia should also carefully consider how they would recover from a potential use by terrorists of a nuclear weapon.

One participant questioned whether U.S.-Russian collaboration on demonstrating lower levels of impact of nuclear weapons could be a slippery political slope vis-à-vis non-nuclear weapon states. Others thought that such a conversation is necessary if nuclear weapons are to exist in the future, because otherwise, if every use of a nuclear weapon is bad, then the only answer is to get rid of them. Ms. Nicholas suggested that the P-5 is looking to move away from a one-dimensional approach regarding the use of nuclear weapons, and instead is considering scenarios in which the use of a small weapon in a certain area would not amount to a globally horrific detonation. Thus, getting scientists involved in these discussions would make certain parties' views seem less self-serving.

One participant concluded that the main issue is not the number of weapons or yield of these weapons, but the targeting of them. He said that the current situation in Southeast Asia between India and Pakistan presents a great risk for use of nuclear weapons; another participant suggested that a U.S.-Russian group meet with representatives from India and Pakistan at a Track-II level to discuss how NATO and the Warsaw Pact maintained stability during the Cold War, when both the U.S. and USSR had enormous nuclear stockpiles, and what lessons could be applied to the current conflict in Southeast Asia to avoid catastrophe. Finally, with respect to classification, some participants suggested that the United States and Russia need to address their classification standards relating to warheads. Differences between what these countries consider to be sensitive information makes communication between these parties difficult.

### **Safety & Security Collaboration Related to NSNW**

*Discussion leader: Dr. Oliver Meier, Deputy Head of International Security Research Division at the German Institute for International and Security Affairs*

Dr. Meier said that cooperation on the safety and security of nuclear weapons may not seem intuitively the easiest area for U.S., Russian and NATO states to work on at the moment, but part of the appeal could lie in the fact that this work would not have direct implications on nuclear postures (that is, numbers, locations, or nuclear doctrine). Rather than directly addressing strategic stability, such work could support crisis stability and tap into global interest in reducing the risks of nuclear accidents/incidents. Both the United States and Russian Federation supported UNSCR1540 that outlines the unique responsibilities both countries have with respect to the safety and security of nuclear weapons. Against the backdrop of conflict in Ukraine, moreover, it may be wiser to consider confidence-building measures (CBMs) that address shared concerns but do not directly affect nuclear postures. For nuclear weapon states, improving safety and security of NSNW should be desirable to avoid unwanted political attention that accompanies incidents. For non-nuclear weapon states in particular, there is widespread concern about the humanitarian impact of nuclear weapons.

Dr. Meier noted that in the past, CBMs in these areas focused on responses to nuclear security threats and on consequence management. For example, Russia and NATO from 2004 to 2007 conducted joint exercises “related to nuclear weapon accident response field exercises.”<sup>2</sup> In an environment where transparency regarding weapons, locations and doctrines may not be so politically easy, CBMs on safety and security could have some advantages.

Dr. Meier suggested a few topics: security, accident/incident consequence management, joint assessment of terrorist threats and nuclear weapons safety. One participant suggested it may be possible for the U.S. and Russia to help other countries on ensuring personnel reliability. Participants advocated renewed talks between NATO and Russia on avoiding unintended escalation, especially in avoiding nuclear escalation. Under the present circumstances, existing mechanisms under the NATO-Russia Council are unlikely to return to business as usual, but given the serious need to avoid escalation, meetings could take the shape of military-to-military discussions. Another useful alternative would be Track-II level discussions. The participants largely agreed that discussions, at some level, on military matters and the Incidents at Sea agreement are crucial in light of the current dangers in international relations.

On balance, collaboration on safety and security is not “low-hanging fruit” but a topic that deserves serious consideration. Three specific hurdles to such collaboration would need to be overcome: classification, vulnerabilities, and politics. Safety and security of nuclear weapons are related to highly sensitive issues of nuclear weapons deployments and practices. Further, no country likes to show weaknesses in its own posture. Finally, all sides would need to explore this in a venue that is somewhat protected from politics.

One participant called for the establishment of a principle that countries that possess nuclear weapons have responsibilities for maintaining safety and security. For established nuclear weapon states, such responsibilities help to reassure allies of safety and security, yet for proliferating countries, the issue becomes more problematic. By helping weapon-holding states improve their safety and security, one participant worried that we could inadvertently be helping them develop better weapons. Another participant noted that it is important for states to avoid giving the impression of a “nuclear club,” where nuclear states help each other while isolating non-nuclear states. The potential development of guidelines for helping countries improve security, while retaining appropriate distancing from the nuclear programs in order to prevent improvement of weapon capabilities, could be helpful. A Russian participant noted that it may be easier for countries to assist in this security aspect by improving personnel reliability in nuclear programs, rather than working on aspects of the countries’ nuclear programs themselves. Another approach would be for countries to instead discuss security in terms of best practices.

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<sup>2</sup> From NATO website: “Between 2004 and 2007, experts and representatives from NRC countries also observed four nuclear weapon accident response field exercises, which took place in Russia and each of the nuclear weapon states of NATO (France, the United Kingdom and the United States). As a follow-on to these exercises, in June 2011, NRC countries participated in a tabletop exercise dealing with emergency response to a nuclear weapon incident. Such activities increased transparency, developed common understanding of nuclear weapon accident response procedures, and built confidence that the nuclear weapon states were fully capable of responding effectively to any emergency involving nuclear weapons.” [http://www.nato.int/cps/en/natohq/topics\\_50090.htm?](http://www.nato.int/cps/en/natohq/topics_50090.htm?)

## **A World Without Tactical Nuclear Weapons?**

*(Discussion leader: Dr. Nikolai Sokov, Senior Fellow at the Vienna Center for Disarmament and Non-Proliferation)*

Dr. Sokov assessed that the deadlock in nuclear negotiations between the U.S. and Russia is the result of domestic politics within the United States and Russia. He asserted that in the current domestic environments, no one wants to be constructive, so in the end, it is easier to just blame others for lack of progress. He noted, though, that discussions surrounding NSNW have been stalled for the past fifteen years. Dr. Sokov suggested that the U.S. will not have a monopoly on high-precision conventional weapons forever and that recognition of this fact could spur a more cooperative U.S. approach. Both parties need to increase transparency. In light of this, Dr. Sokov suggested extending the Vienna Document to include tactical nuclear weapons, “conventional strike weapons with theater ranges” and air/missile defense systems. He stated that once a transparency regime for “high-precision conventional and air/missile defense” capabilities is created, then tactical nuclear weapons *could* be eliminated.

Russia’s official position on NSNW negotiations is that if conventional and missile defense capabilities are included in discussions, then Russia is willing to talk about NSNW. However, many of the participants expressed their doubts that arms control is on the agenda of either Washington or Moscow policymakers. In this case, improving transparency and establishing confidence-building measures become especially important. This could present an opportunity for extending the Vienna Document and enhancing Open Skies to expand transparency because there is likely to be little focus on it. One of the drawbacks to less attention to arms control in the U.S. context is the lack of expertise on Capitol Hill, which can lead to Congress following political biases rather than understanding technical and strategic aspects of arms control agreements.

## **Concluding Session**

Russian participants suggested that the collapse of the INF Treaty may be imminent, which would make even the implementation of New START difficult. A total collapse of the arms control regime would mean the end of any rules of the game. Unfortunately, thinking about and supporting crisis stability is fairly foreign to this generation of leaders. And yet, crisis may be the “new normal” in many arenas (e.g., climate, cyber, space). It will become increasingly important to anticipate developments that could facilitate collaboration. Crises can provide opportunities for collaboration, but first we need better tools to manage crises.

Appendix A

**TRACK-II DIALOGUE ON LIMITING NON-STRATEGIC NUCLEAR WEAPONS**

**Agenda**

**Thursday, June 4, 2015**

- 1:30 p.m. – 1:45 p.m.**      **Introductions; Recap of October discussion**  
**Sharon Squassoni**, Director and Senior Fellow, Proliferation Prevention Program, CSIS
- 1:45 p.m. – 3:15 p.m.**      **Session I: Military Doctrinal Issues**  
*What are the issues of concern that relate to NSNW? What are the issues of concern more broadly?*  
Discussion leaders:  
**Jeffrey McCausland**, Colonel, U.S. Army (ret.)  
**Evgeny Buzhinsky**, Chairman of the Executive Board, PIR Center  
**Guy Roberts**, former Deputy Assistant Secretary General for Weapons of Mass Destruction Policy, NATO
- 3:15 p.m. – 3:30 p.m.**      **Break**
- 3:30 p.m. – 5:00 p.m.**      **Discussion**
- 5:00 p.m. – 6:30 p.m.**      **Light Reception** (9<sup>th</sup> Floor Balcony)
- 6:30 p.m. – 8:30 p.m.**      **Dinner at Tabard Inn** (1739 N Street NW, Washington DC 20036)

**Friday, June 5, 2015**

- 9:00 a.m. – 10:30 a.m.**      **Session II: Transparency Pros and Cons**  
Discussion leaders:  
**Eugene Miasnikov**, Director, Center for Arms Control, Energy and Environmental Studies  
**Sergey Rogov**, Director, Institute for US and Canadian Studies of the Russian Academy of Sciences
- 10:30 a.m. – 10:45 a.m.**      **Break**
- 10:45 a.m. – 12:15 p.m.**      **Session III: Technology Development**  
Discussion leaders:  
**James Fuller**, former Director of Defense Nuclear Nonproliferation Programs, Pacific Northwest National Laboratory

**Nancy Jo Nicholas**, Associate Laboratory Director, Los Alamos National Laboratory

**12:15 p.m.**

Break

**12:30 p.m. – 1:45 p.m.**

**Lunch**

**1:45 p.m. – 2:45 p.m.**

**Session IV: Safety & Security Collaboration Related to NSNW**  
Discussion leader: **Oliver Meier**, Deputy Head of Research Division, International Security, Stiftung Wissenschaft und Politik

**2:45 p.m. – 3:00 p.m.**

**Break**

**3:00 p.m. – 4:00 p.m.**

**Session V: A World Without Tactical Nuclear Weapons?**  
Discussion leader: **Nikolai Sokov**, Senior Fellow, James Martin Center for Nonproliferation Studies

**4:00 p.m. – 5:30 p.m.**

**Discussion of recommendations**

## Participants List

**Mark Beddoes**, Chief, Arms Control Interagency Liason Division, DTRA

**Evgeny Buzhinsky** Chairman of the Board, PIR Center

**Simond DeGalbert**, Visiting Fellow, Europe Program, CSIS

**Gregory Dwyer**, Deputy Director, Office of Nuclear Verification, DoE/NNSA (Dinner Only)

**James Fuller**, Former Director of Defense Nuclear Nonproliferation Programs, Pacific Northwest National Laboratory

**Robert Kim**, Program Coordinator and Research Assistant, Proliferation Prevention Program, CSIS

**Andrew Kuchins**, Director and Senior Fellow, Russia and Eurasia Program, CSIS

**Ronald Lehman**, Former Director, U.S. Arms Control and Disarmament Agency

**Anya Loukiyanova**, Program Officer, Stanley Foundation

**Jeffrey Mankoff**, Deputy Director, Russia and Eurasia Program, CSIS

**Jeffrey McCausland**, Colonel (Ret.), U.S. Army

**Oliver Meier**, Associate, Stiftung Wissenschaft und Politik

**Eugene Miasnikov**, Director, Center for Arms Control, Energy and Environmental Studies

**Nancy Jo Nicholas**, Associate Director, Los Alamos National Laboratory

**Steven Pifer**, Director, Brookings Arms Control and Non-Proliferation Initiative

**Guy Roberts**, Former Deputy Assistant Secretary General of WMD Policy, NATO

**Sergey Rogov**, Director, Institute for the U.S. and Canadian Studies

**Frank Rose**, Assistant Secretary, Bureau of Arms Control, Verification, and Compliance, U.S. State Department (Lunch Only)

**Paul Schwartz**, Senior Associate, Russia and Eurasia Program, CSIS

**Nikolai Sokov**, Senior Research Associate, Center for Nonproliferation Studies

**Sharon Squassoni**, Director and Senior Fellow, Proliferation Prevention Program, CSIS

**Petr Topychkanov**, Associate, Carnegie Endowment for International Peace

**Sergey Utkin**, Head of the Department of Strategic Assessment, Centre for Situation Analysis, Russian Academy of Sciences

**Amy Woolf**, Specialist in Nuclear Weapons Policy, Congressional Research Service

## Discussion Paper: Next Steps Regarding Limits on Non-Strategic Nuclear Weapons (NSNW)

Participants were asked to contribute a few ideas for further steps related to limiting non-strategic nuclear weapons (NSNW) in four areas: military doctrinal talks, transparency, technology development, and safety/security. The resulting compendium attempts to limit redundancy but should be reviewed to ensure nuances have not been lost. The **bold text** is the idea; the plain text describes what it would cover and the *italicized text* is the rationale. (Please note that commentary provided from participants was used to the extent possible, but the focus was on the specific ideas/steps themselves.)

Additional discussion of these should focus on prioritization, identification of venues and scope. One participant suggested that these transparency and confidence-building measures should be aimed first at avoiding unintended crisis escalation and second, on reestablishing conditions for substantive talks on increased transparency and confidence.

A general question is whether these activities/discussions would most usefully be conducted solely between the US and Russia, the US, Russia, NATO; or whether there are benefits to broadening these, in some cases, to include China and/or Asian allies (e.g., Japan, South Korea). A second question is whether (where not already delineated) these activities/discussions should take place on the Track I or Track II level. In addition, an important question is what role, if any, multilateral organizations like OSCE and/or NATO should play.

## Military Doctrinal Talks

The NATO Russia Charter signed in 1997 calls for discussions on military doctrine. It could be useful to discuss the continued validity of that document, but it is also abundantly clear that doctrinal discussions could help respond to some of the questions and concerns arising from the crisis in Ukraine. For example, many in the West believe that Russia now openly considers the use of nuclear weapons in any scenario in which it begins to lose to a superior force and that the Russian leadership has allegedly embraced a concept of “de-escalation” in which Russia would threaten to use nuclear weapons during a local conflict in order to deter an opponent from pursuing further military gains. These concerns need to be addressed. On the other hand, Russia needs clarity on U.S. policy on extended deterrence and NATO’s notion of “restoring deterrence.”

### **1. Doctrinal evolution on the roles, missions, and objectives of non-strategic nuclear weapons. Questions to consider include what role do NSNW play in respective military strategies and how do existing trends in the development of military doctrine and force posture likely affect the potential for conflict and use of NSNW or SNW in a future conflict?**

Specific issues to cover could include: (i) conditions under which NSNW are likely to be used; and (ii) whether existing military balances (and imbalances) in both conventional forces and NSNW are creating greater incentives for conflict or the use of nuclear weapons in a future conflict, (iii) whether efforts to upgrade NSNW capabilities, including pursuit of cleaner, low-yield NSNW as well as modernization of existing weapons, such as B61 bombs, will increase incentives for further development or use of NSNW, and (iv) what specific measures could be taken either unilaterally or jointly with respect to force posture or otherwise to alter existing trends and reduce incentives for conflict or the use of nuclear weapons.

An important first step would be to clarify how the Russian de-escalation concept and the escalation strategies of the US and NATO’s are similar and how they differ.

### **2. Linkage between NSNW and other weapon systems and how changes in one category could affect the other.** Specific issues to cover could include:

(i) the impact of BMD on the role of nuclear weapons including NSNWs in Russian and US/NATO military doctrine; Is the relevance of ballistic missile defense more of a problem in the NSNW context? Less of a problem? Or is its relevance equal no matter what? Could de-coupling these issues be advantageous? Would greater transparency or technical verification intrusiveness reduce concerns on either or both sides?

*There is a definite interaction between transparency and possible reductions of nuclear forces including NSNWs and development of modern high precision conventional weapons or conventional military technologies in general as well as other issues involve air and missile defenses, space, and cyber. In the Russian view, any discussion on NSNWs should be accompanied by appropriate discussions on Prompt Global Strike concept, weaponization of outer space and high precision conventional weapons. In the long term, discussions on weapons based on other physical principles could also be included in the bilateral arms control agenda. But the most important issue for Russia is of course the U.S. Global BMD system. A U.S. refusal to reconsider its BMD plans for Europe in the context of closing the Iranian nuclear file would be interpreted by the Russian military as*

*evidence that the European Phased Adaptive Approach program is directed at deterring Russia. How do other global or regional security developments interact with these issues?*

(ii) how strategic conventional weapons (their development and deployment) will affect NSNW doctrine and the potential for use of NSNW, and

(iii) whether increasing conventional military capability will eventually lead to reduced reliance on NSNW.

**3. The role of NSNW reductions in nuclear force/nuclear deterrence asymmetries.** Is it even possible to decouple nonstrategic nuclear weapons reductions from strategic weapons reductions (why) given the differences in deterrence doctrine amongst the NWS?

**4. Current state of conventional arms control agreements.** This would provide information about the size of military forces, their deployment, and exercises (to include Dayton Arms Control Accords, Open Skies, and Vienna Document).

**5. Tactical nuclear weapons at sea and the validity of the Agreement to Avoid Serious Incidents at Sea.**

**6. New developments in conventional weaponry.** For example, how do precision-guided munitions change doctrine? Change emphasis between nuclear and conventional?

*A one-time seminar on responses to technological advancements of new systems could highlight concerns over these new weapons and develop into a scientific inquiry into the feasibility of putting limits on such weapons. Of course, many issues arise. How would you stop countries from developing new weapons? Where would you negotiate agreements to ban such weapons (Conference on Disarmament, Certain Conventional Weapons Convention process, the Ottawa process)? What type of verification regime would you have to have in place?*

**7. European security and role of nonstrategic nuclear weapons in the European military balance**

## **Transparency (Data Sharing)**

**1. Exchange historical data about NSNW.** U.S. and Russia could also reaffirm and confirm their commitment to the 1991/92 Presidential Nuclear Initiatives. This would be an important affirmation that both parties have eliminated those NSNWs that are most difficult to verify (artillery and mortar shells, land mines for example). The challenge here is that the information cannot be provided about warheads dismantled since the PNIs without indirectly providing information about the current numbers. Public, parallel, unilateral statements by Russia and the U.S. confirming the PNIs would apply to all U.S. and Russian NSNW, no matter where they are located would be a significant confidence building measure.

*The historical accounting in the context of implementation of Presidential nuclear initiatives of the early 1990s could reveal very sharp and encouraging reductions in NSNWs. Disclosure of the total numbers of NSNWs decommissioned pursuant to the PNI process would instill greater confidence regarding current capabilities and intentions. Were the parties to go even further and agree on*

*measures for verifying such claims, an admittedly challenging step, such a process could be used to develop the means for verifying compliance with limitations under a future NSNW arms control agreement. In order to make the process effective, each side would need to disclose the total number of NSNWs that were destroyed or de-commissioned and placed in storage under the PNIs, how they were de-commissioned, and what happened to resulting fissile material. It would presumably not be necessary to disclose the total starting and ending numbers of NSNWs held by each side, since the purpose here would be to validate historical claims made in connection with the PNIs, rather than to provide details on current inventories.*

## **2. Numbers, types of current NSNW.**

A second step would be to exchange information on the current numbers of NSNWs.

**3. Location/storage sites.** To include transparency about sea-launched cruise missiles. Are the locations of NSNW significantly more sensitive than that for strategic weapons? If so, how do we deal with that issue in establishing baseline numbers and subsequently determining numbers of reductions? Could also include dual-capable aircraft. As confidence is built, notifications of changes in locations or sites might be possible.

*Russian officials have indicated the Russia may deploy dual-capable aircraft and missile systems in Crimea. This plan has raised concerns in both the United States and among some NATO allies about the potential threats posed by these weapons and the effect on tensions in the region. Discussions about the plans for these deployments, and notifications if and when the weapons move into the region, could ease some of these concerns. In exchange, the United States and NATO could provide Russia with notifications if and when they move U.S. nuclear weapons based in Europe. In addition to the concerns about stationing NSNW in Crimea, there are concerns that NSNWs could be brought to the territories of new NATO member-states in the Baltic area under the guise of Air Policing.*

**4. Definitions** (e.g. based on range, yield, missions or other criteria) and common categorization (e.g. active non-deployed, deployable in reserve or non-deployable awaiting disassembly) of NSNWs setting the parameters for data exchange including the categories which would be covered by transparency measures. These consultations on definitions/categorization and subsequent data exchanges could start the process of building mutual trust regarding NSNWs.

**5. Levels and indicators of operational readiness, and declarations of existing NSNW platforms.**

**6. Notification of certain types of activity involving NSNW, primarily related to the movement of these weapons.**

**7. Reciprocal onsite visits of former NSNW storage and deployment sites and to selected military sites designed to store non-strategic nuclear weapons when deployed from centralized storages to make sure that these sites are not used for storing the weapons on a regular basis.** In the case of former sites, the example of the French invitation to CD member states to visit sites in April and June 2015 where air- and sea-based weapons were stored/deployed could offer a starting point. In the case of existing sites, the number and types of checks would be the subject of future negotiations between Russia and the United States on the establishment of a mutual transparency regime regarding NSNW. In the future, with trust growing between the parties inspections can be extended.

*Similar visits in a NATO-Russia format would have the short-term goal of re-establishing contacts at the working level and in the medium-term could aim to discuss and develop on-site inspection procedures for storage sites and dismantlement facilities.*

**8. Discussion of new technologies that may enhance transparency even at some distance.**

**9. Discussions on alleged violations of INF Treaty (on both sides).** These exchanges should take place at the expert level, preferably in the Special Verification Commission. The agenda would flow from the set of allegations both sides leveled against each other. Clarification of such allegations would likely involve confidential information exchanges, public statements as well as on-site visits to evaluate the explanations provided.

**10. How do we differentiate in a technical verification sense, a non-strategic warhead/weapon from a strategic one and should we in the future?** Can we come up with functional definitions in a verification context that are observable/can be measured without revealing sensitive design information? Do we need to accept the possibility of state-by-state multiple definitions? Otherwise, inspectors would have to identify/differentiate non-strategic warheads from strategic warheads using technical verification measures that are able to perform warhead "type-differentiation" -- that is, more intrusive inspection measures.

**11. Data exchanges and notifications related to aviation and missile exercises:** *Over the past several months, analysts have documented high numbers of Russian aviation exercises that have come close to NATO and U.S. territory and have flown without transponders through international airspace. These events increase the chance of accidents that could lead to further escalation of tensions. NATO has also expanded its Baltic Air Policing missions and other exercises that bring aircraft close to Russian territory. Russia has objected to these exercises. Discussions about these exercises, and possible agreements on notifications before they occur, might not only reduce the risk of accidents but could also open a new path for cooperation that might help relieve some of the tensions currently evident in Europe.*

## **Technology Development**

**1. Development of technology to confirm presence/absence of nuclear weapons (or of sufficient mass of fissile material for use in nuclear weapons).** *Cooperative and collaborative verification R&D on a bilateral or multilateral basis, well in advance of actual negotiations, demonstrates positive intent, leads to beneficial mutual understanding of the most difficult problems, and offers the potential for more creative solutions.*

*Anything beyond New START that seeks to constrain non-deployed strategic weapons will likely require intrusive monitoring. Initially it will be enough to use techniques and equipment that Russian and US inspectors are currently employing to confirm the accuracy of declared data on warheads on deployed ICBMs and SLBMs (see Chapter V of the Protocol to 2010 New START Treaty). Later, when experience is gained, the methods of intrusive technological control with respect to non-strategic nuclear weapons can be refined on the basis of new developments as well as the technical experience of past cooperation such as was gained in 1990 with the cooperation of Russian and US nuclear laboratories.*

**2. Authentication of the prototype verification equipment, that is, to authenticate the measurement results.** *For intrusive verification measurements on sensitive nuclear items, it has yet to be demonstrated after nearly two decades of study by the U.S. and Russia that we can make such measurements and concomitantly prove to an inspecting party that these measurements can be believed.*

**3. Collaboration on the development of verification techniques, including resumption of joint work on non-intrusive verification and monitoring measures.** Lab-to-Lab cooperation in this area will support confidence building by developing innovative approaches and technologies to support future agreements on NSNWs. Experts could resume discussions conducted under the Trilateral Initiative with the IAEA.

*Working together, Russian and U.S. experts could collaboratively develop technologies for on-site and remote monitoring or production signatures and nuclear forensics. These collaborative efforts would increase confidence in ensuring both sides were in compliance with current and future arms control agreements. Some approaches might permit other concerned and relevant nations to participate. This may be one area where despite political tensions there could be a willingness to continue shared research projects.*

**4. Continue efforts to develop non-intrusive inspection mechanisms, including nuclear dismantlement verification solutions that can be used to track a weapon from storage through the dismantlement process.** Ideally, this capability could be refined to move beyond template matching to develop a unique fingerprint for each weapon system. It would be preferable for this to be done jointly between the US and Russia in a renewed lab-to-lab setting, because that would also serve as a confidence-building measure. If for security reasons that is not feasible, either side could take the lead. This is a short- to medium-term requirement.

**5. Support greater involvement by NNWS specialists in all aspects of intrusive inspection technology development.** If the assumption is that no sensitive warhead design information is to be shared, there is no fundamental reason to exclude NNWS specialists. As part of this greater involvement, a review of the last 20 years of collaborative work between Russia and the United States needs to be undertaken for the benefit for new participants. This review should be conducted at the technical specialist level, not by policymakers or program leaders.

**6. Investigations into authenticatable information barriers, high security unique identifiers, template approaches to warhead type differentiation, warhead item container effects, non-nuclear inherently non-sensitive warhead signatures, non-sensitive standard test objects, and advanced cryptographic approaches for item counting and locating.**

**7. Continue R&D efforts on developing container monitoring such as muon radiography.** This technology could be used both for monitoring the movement of containers purported to contain controlled nuclear munitions to ensure that the item inside the container is actually a radioactive source consistent with the claimed munition. It could also be used to check items leaving the facility at perimeter checkpoints to detect diverted materials.

*Such technologies may offer promise in other areas, including port security, so the development costs might be easier to justify and obtain. Because of this, multilateral development would be worth exploring. This is a medium- to long-term requirement.*

**8. Academic conferences on technology development:** Such projects could focus more on conceptual rather than development issues. For example, academic or scientific meetings could explore and identify the types of technologies that might be useful to verify the presence or absence of nuclear warheads or material in support of a possible future agreement to limit the locations or numbers of nonstrategic nuclear weapons.

*In addition to any official cooperation with government funding, parties could pursue some bilateral, scientist-based or academic-based projects.*

**9. Multilateral technology experiments:** While the bilateral track may be blocked for a while, there may be room for multilateral cooperative experiments on monitoring and verification technologies. While these may qualify more as discrete exhibitions (such as with the UK-Norway experiment) than programs that cooperate to develop new technologies, they may also help set the stage for cooperation in the future, if and when the arms control path returns.

## **Safety and Security of NSNW**

### **1. Joint threat assessment of the risk of terrorists penetrating an NSNW storage site.**

*For the first time the Russian military doctrine includes a reference to the threat of radiological terrorism. Specifically the new doctrine stated that there is a “growing threat of global extremism (terrorism) and the “real threat of terrorist acts using radioactive materials and toxic chemical agents”. So the doctrine once again confirmed that the issue of safety/security of NSNWs remains the highest priority for the Russian leadership.*

### **2. A joint assessment (including reciprocal visits to selected nuclear installations) of site security improvements to guard against risk of terrorist penetration.**

This could include sharing best practices for ensuring safety and security of NSNW. Could be augmented by visits to storage sites. If there was a serious exchange of ideas regarding how the sides secure their NSNW, they might jointly red team to identify improvements.

### **3. Exercises focused on nuclear accidents/incidents and associated consequence management.**

These could include recovery exercises (previously done) in which Russia and the U.S./NATO forces work together to recover stolen nuclear weapons or fissile material. Additional types of joint exercises (e.g. repulsing terrorist attack on nuclear installation) may be considered. But of course all these may be conducted only after resumption of the bilateral and multilateral (with NATO) military cooperation. In addition, exercises could help build broader awareness among decision-makers, diplomats and other stakeholders on the risks of unintended nuclear weapons use or a nuclear accident/incident, in the context of regional crises. For example, table-top exercises with NATO Parliamentary Assembly and Duma members, simulating a nuclear weapons emergency could help highlight the dangers associated with current nuclear postures. Public outreach around such an exercise could help to increase political awareness.

**4. Jointly develop nuclear accident/incident response procedures, including cooperative efforts in the event of a nuclear accident or theft or loss of NSNW-related materials.** Discuss how NATO and Russia might interact and cooperate in the event that one of their NSNW was acquired by a non-state actor. Identify resource requirements including expert personnel and specialized equipment needed for emergency response, transportation requirements, forward basing options, and other details. Conduct tabletop and joint exercises to develop and test procedures for responding to

different crisis scenarios. Develop a set of best practices, and a venue for periodic review and update of same.

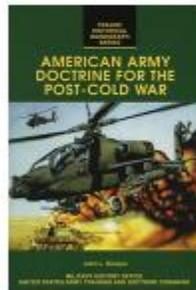
*These nuclear weapon safety demonstrations would increase transparency on weapons safety by the four nuclear weapon states (US, UK, Fr, RF), develop a common understanding of nuclear weapons safety procedures, share best practices, and build confidence on the full range of capabilities to respond effectively to emergencies involving nuclear weapons.*

**5. Set up a UNSCR 1540 joint working group to explore challenges specific to safeguarding NSNW from access by non-state actors, and to develop a set of best practices.** This could include sharing details on current measures used by each to comply with UNSCR 1540 and to safeguard NSNW-related items more generally. It could also include jointly evaluating strengths and weaknesses of existing security measures, ongoing steps being taken to improve safeguards, and potential for cooperation on developing new procedures and technology to achieve objectives with an eye on evolving best practices. *This initiative could help boost efforts to implement UNSCR 1540 as well as cooperation on NSNW in a relatively low-risk context, since neither side would be required to disclose details regarding the size, composition or location of respective NSNW inventories.*

**6. Initiate a dialogue between NATO and Russia on measures to avoid unintended escalation of military encounters (overlap with items in military doctrinal area).** *An open-ended dialogue could aim to evaluate how the Incidents at Sea Agreement and the Agreement on the Prevention of Dangerous Military Activities can be improved, broadened and complemented.*

**Presentations**  
**Session I: Military Doctrinal Issues**  
**Jeffrey McCausland**

**Military Doctrine Talks**  
*Thinking about the future....*



**Dr. Jeffrey D. McCausland**  
**Dickinson College**  
**June 2015**

2

**Hardly a new question or new concern.....**

*“The commander who has five or six thousand of our heavy cavalry and the help of God will need nothing more”.*

**- The Emperor Nicephorus II Phocas (AD 912-969)**

*“It is not the big armies that win battles, it is the good ones”.*

**-Field Marshall Maurice Comte de Saxe, (1732)**

*“Quantity has a Quality all its own”.*

**- Josef Stalin**

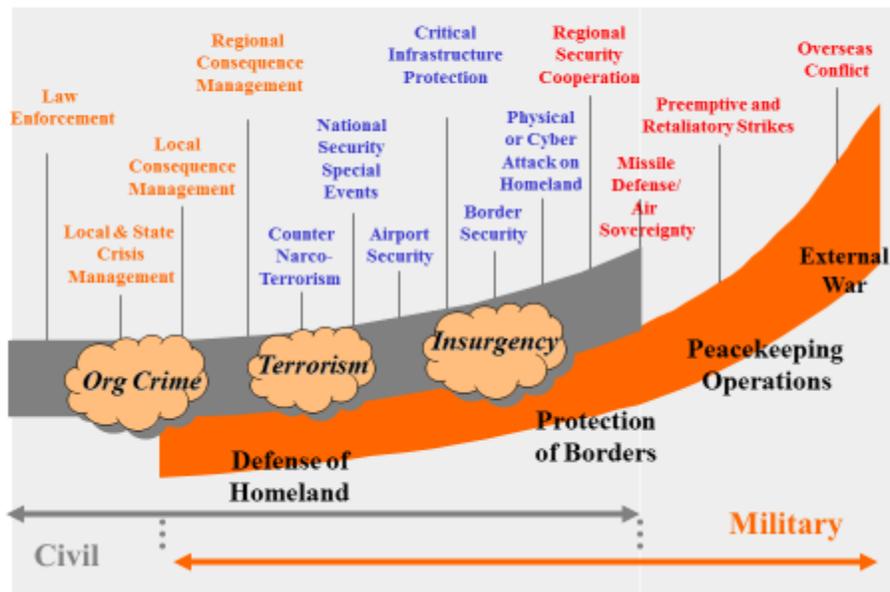
## The Fundamental Question

*How do both the United States and Russia view strategic stability in the 21<sup>st</sup> century? How do we think about our respective military doctrines to effect stability?*



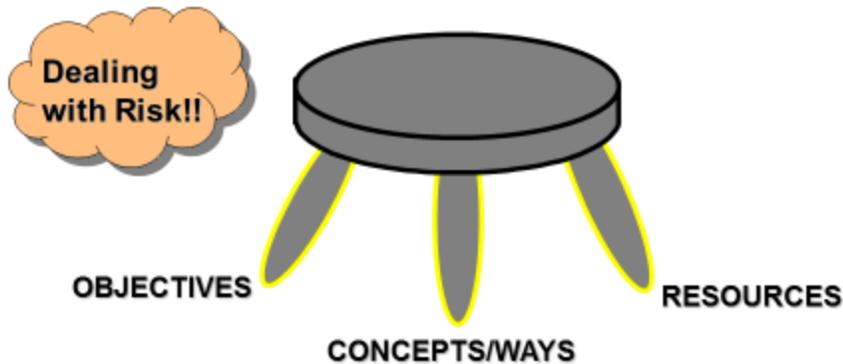
*Moving from Mutual Assured Destruction (MAD) to Mutual Assured Stability (MAS)...*

## Potential Spectrum of Conflict



## Thinking about national security

### RELATING ENDS, WAYS & MEANS



## US Definitions of Doctrine

**Joint:** Joint doctrine provides the fundamental principles that guide the employment of US military forces in coordinated action toward a common objective. It is authoritative guidance and will be followed except when, in the judgment of the commander, exceptional circumstances dictate otherwise. Joint doctrine applies to the Joint staff, CCDRs, subordinate unified commanders, JTF commanders, and subordinate component commanders of these commands, the Services, and CSAs. Joint doctrine takes precedence over individual Service's doctrine, which must be consistent with joint doctrine."

*JP 1, Doctrine for the Armed Forces of the United States.*

**Army:** Fundamental principles by which the military forces or elements thereof guide their actions in support of national objectives. It is authoritative but requires judgment in application.

*ADRP 1-02*

# Russian Definition of Doctrine

**1. Military Doctrine of the Russian Federation is a system of officially adopted State views on the preparation for armed defence and armed protection of the Russian Federation.**

2. It is based on the analysis of military threats and military threats to the interests of the Russian Federation and its allies formulated the basic provisions of the military policy and military economic support for defence of the state. 3. The legal basis Military doctrine consists of the Constitution of the Russian Federation, generally recognized principles of international law and international treaties for the Russian Federation in the field of defence, arms control arms and disarmament, the Federal Constitutional laws, federal laws and legal acts of the President of the Russian Federation and the Government of the Russian Federation. 4. The Military Doctrine takes into account the main provisions and the concept of long-term socio-economic development for the Russian Federation, Strategy for the national security of the Russian Federation, relevant provisions of the Foreign Policy Concept of the Russian Federation, the Maritime Doctrine of the Russian Federation, Strategy for the Development of the Arctic Zone of the Russian Federation and National Security and other strategic documents planning for the period up until 2020.

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# Russian Definition of Doctrine (contd.)

**5. Military Doctrine reflects the commitment of the Russian Federation to protect national interests and interests of its allies. Use of military action only after the exhaustion of opportunities to apply political, diplomatic, legal, economic, information and other instruments of a non-violent nature.**

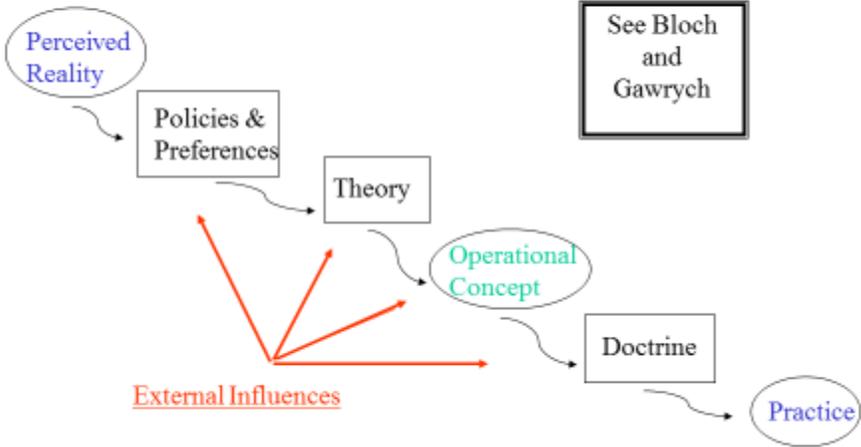
6. Provisions of the Military Doctrine are specified in messages of the President of the Russian Federation to the Federal Assembly and adjusted strategic planning in the military (military planning). 7. Implementation of the Military Doctrine is achieved by centralization of public administration in the field of defence and security and carried out in accordance with the federal legislation, regulatory/legal acts of the President, the Government of the Russian Federation and federal executive bodies. 8. Military Doctrine includes the following basic concepts: a) military security of the Russian Federation - a state of protection of vital important interests of the individual, society and the state from external and internal military threats associated with the use of military force or threat of violence, characterized by the absence military threat or the ability to resist it; b) military threat - a state of interstate or domestic relations characterized by a set of factors that could, under certain conditions lead to a military threat; c) military threat - a state of interstate or domestic relations, characterized by the possibility of a military conflict between opposing sides, a high degree of readiness by any state (group of states), separatist (Terrorist) organizations to use military force (Armed violence); d) military conflict - shape permission interstate or intrastate conflicts with use of military force (concept covers all types armed confrontation, including large-scale, regional, local wars and armed conflicts).

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# National Perceptions



# “Reality” to Doctrine



## **How should we proceed?**

- **Track 2 to inform Track 1? Why now?**
- **Use existing agreements and frameworks where possible. *Don't reinvent the wheel....***
- **Begin with questions that need to be answered...**
- **Consider our past experience with doctrinal discussions prior to CFE and PNI.**

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## **What should we talk about?**

- **How do our military doctrines contribute to stability in an age of instability?**
- **How do new conventional weapons fit into our current thinking about military doctrine? What impact will they have on doctrine/development with respect to NSNWs?**
- **How do non-strategic nuclear weapons (NSNW) fit into our military doctrines? The impact of BMD on the role of NSNWs?**
- **More specifically, Russian considerations of role of nuclear weapons and “de-escalation”. NATO’s policy of “extended deterrence” and “restoring deterrence” in the 21<sup>st</sup> century.**

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## **Global Initiative to Combat Nuclear Terrorism?**

- Develop/improve accounting, control, and physical protection of nuclear weapons and material.
- Enhance security of civilian nuclear facilities.
- Improve ability to detect nuclear/radioactive materials. Prevent illicit trafficking/cooperate on developing detection systems.
- *Improve participants capabilities to search for, confiscate, and establish safe control over unlawfully held nuke material/devices.*
- Prevent safe havens and financial resources to terrorists to acquire or use nuclear weapons/material.
- Ensure adequate legal/regulatory frameworks to provide for appropriate criminal action against terrorists.
- *Improve participant capabilities for response, mitigation, and investigation of a terrorist attack using nuclear wpns/material.*
- *Promote information sharing pertaining to suppressing acts of nuclear terrorism.*

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## **Arms control and Military Doctrine**

*Arms Control -- any legally or politically binding agreement between sovereign states which (1) provides transparency and predictability of mil activities; (2) constraints or prohibits certain mil opns; or (3) limits holdings of mil equipment and/or personnel.*

## **Arms control, military doctrine, and stability**

- **Does CFE still have a role particularly in the North Caucasus?**
- **Should we preserve the Dayton Arms Control agreement?**
- **Can we improve Open Skies and Vienna Document as “*Means*” to maintain stability?**
- **Should we review and revitalize the Convention to Avoid Serious Incidents at Sea?**

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### **Agreement on the Prevention of Serious Incidents at Sea** ***Brief Summary***

- **Steps to avoid collisions.**
- **Not interfere in the formations of “other” Parties.**
- **Avoiding maneuvers in areas of heavy sea traffic.**
- **Requiring surveillance ships to maintain a safe distance from objects of investigation to avoid *embarrassing/endangering ships under surveillance*.**
- **Using accepted intl signals when ships maneuver near one another.**
- **Not simulating attacks at, launching objects toward, or illuminating the bridges of other Party’s ships.**
- **Informing vessels when submarines are exercising near them.**
- **Requiring acft commanders to use the greatest caution and prudence in approaching acft and ships of other Parties. Not performing simulated attacks against or aerobatics over ships. Not dropping hazardous objects near other ships.**

# NATO's Deterrence and Defense Posture and NATO-Russia Transparency and Confidence Building Measures: Looking Back to Look Forward

## Session I: Military Doctrine

Guy B. Roberts<sup>1</sup>

### I. NATO's Deterrence and Defense Posture—A Short Review

During the Cold War (1948-1989) NATO's deterrence and defense posture relied heavily on nuclear forces primarily because the Alliance was presumed to be in a position of conventional military inferiority in relation to the Soviet Union and its Warsaw Pact allies. In the event of war, NATO expected that they would have to employ nuclear weapons within days in an attempt to convince the Soviets to stop the attack. Subsequently, as a result of the 1967 Harmel Report the Alliance embarked on a "two-track" process that provided for military defense with nuclear weapons, but also equally emphasized détente, which included arms control, disarmament and balanced force reductions, to achieve and maintain peace and stability within Europe.<sup>2</sup>

Since the end of the Cold War NATO has avoided any explicit references to Russia as a potential security challenge. Indeed, the official Alliance position today is that Russia is and technically does remain a partner as a member of the Partnership for Peace in accordance with the NATO – Russia Founding Act of 1997. The 1999 Strategic Concept noted, however, that "the existence of powerful nuclear forces outside the Alliance also constitutes a significant factor which the Alliance has to take into account if security and stability in the Euro-Atlantic area are to be maintained."<sup>3</sup> The most "powerful nuclear forces outside the Alliance" were and remain those of Russia.

Ten years later, NATO's 2010 Strategic Concept identified three core tasks of the Alliance one of which is collective defense using a mix of nuclear, conventional and missile defense capabilities. It further alluded indirectly to Russia as a potential security threat by taking note of the extensive reductions in U.S. nuclear weapons in Europe since the end of the Cold War and stating that "in any future reductions, our aim should be to seek Russian agreement to increase transparency on its nuclear weapons in Europe and relocate those weapons away from the territory of NATO members. Any further steps must take into account the disparity with the greater Russian stockpiles of short-range nuclear weapons."<sup>4</sup> Nevertheless, the essential thrust of the Strategic Concept was to emphasize the Russia-NATO partnership and cooperation "convinced that the security of NATO and Russia is intertwined and that a strong and constructive partnership based on mutual confidence, transparency and predictability can best serve our security."<sup>5</sup>

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<sup>1</sup> This is a discussion paper prepared for a workshop on non-strategic nuclear weapons sponsored by the Center for Strategic and International Studies held 4-5 June 2015.

<sup>2</sup> The Harmel Report is available at: [http://www.nato.int/cps/en/natohq/topics\\_67927.htm](http://www.nato.int/cps/en/natohq/topics_67927.htm).

<sup>3</sup> North Atlantic Council, "Strategic Concept," November 7, 1991, para. 20. Available at: [http://www.nato.int/cps/en/natolive/official\\_texts\\_27433.htm](http://www.nato.int/cps/en/natolive/official_texts_27433.htm).

<sup>4</sup> North Atlantic Council, "Strategic Concept," November 19, 2010, para. 26. Available at: <http://www.nato.int/strategic-concept/index.html>.

<sup>5</sup> *Id.* para 33-34.

NATO's defense posture has increasingly relied on conventional and missile defense capabilities to supplement its nuclear deterrence posture, which has been significantly readjusted at lower numbers with a promise to, as practicable, make further reductions. As noted in the November 2010 Lisbon Summit Declaration:

With the changes in the security environment since the end of the Cold War, we have dramatically reduced the number of nuclear weapons stationed in Europe and our reliance on nuclear weapons in NATO strategy. We will seek to create the conditions for further reductions in the future.<sup>6</sup>

However, as previously noted, any future reductions of U.S. weapons in Europe would be done only on the basis of reciprocity, which NATO has yet to define. Of course, "reciprocity" does not necessarily have to be narrowly defined as equality or equivalence, nor should it be used as an excuse for holding back on measures that may be beneficial in their own right that could be undertaken by either the U.S. or collectively NATO in the hope of a "reciprocal" type response. The 1991-92 Presidential Nuclear Initiatives (PNIs) and the Cooperative Threat Reduction Programs, for example, were offered without a requirement for "reciprocity."

The 2010 Strategic Concept revalidated the importance of NATO's deterrence posture stating that "deterrence, based on an appropriate mix of nuclear and conventional capabilities, remains a core element of our overall strategy....As long as nuclear weapons exist, NATO will remain a nuclear alliance."<sup>7</sup> This was further confirmed by then Secretary of State Hillary Clinton declaring at a NATO foreign ministers' meeting in April 2010 that "As a nuclear alliance, sharing nuclear risks and responsibilities widely is fundamental," and emphasized the importance of the U.S. extended deterrence posture and the shared roles of as many Allies as possible.<sup>8</sup>

The Alliance's current nuclear posture or arrangements include multinational risk and responsibility sharing and multinational decision making and policy implementation. With the exception of France, all NATO allies participate in nuclear policy and planning decisions and at least 16 nations have active roles in the nuclear mission with regard to U.S. nuclear weapons stationed in Europe.<sup>9</sup> These arrangements have promoted Alliance cohesions, increased the influence of the non-nuclear European Allies regarding U.S. nuclear policy, and reassured the Allies as to the genuineness and effectiveness of U.S. extended nuclear deterrence commitments.

After agreeing to the 2010 Strategic Concept, the Alliance then undertook an extensive review of its deterrence and defense posture. That review, called the 2012 Deterrence and Defense Posture

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<sup>6</sup> North Atlantic Council, Lisbon Summit Declaration, para. 31. Available at: [http://www.nato.int/cps/en/natolive/official\\_texts\\_68828.htm](http://www.nato.int/cps/en/natolive/official_texts_68828.htm). Note also para 30 where the Alliance confirms the importance of deterrence as a core element of collective defense.

<sup>7</sup> North Atlantic Council, "Strategic Concept," November 7, 1991, para. 17. Available at: [http://www.nato.int/cps/en/natolive/official\\_texts\\_27433.htm](http://www.nato.int/cps/en/natolive/official_texts_27433.htm).

<sup>8</sup> Secretary of State Hillary Clinton quoted in Mark Landler, "U.S. Resists Push by Allies for Tactical Nuclear Cuts," *New York Times*, April 23, 2010.

<sup>9</sup> Even though France in 2008 decided to participate in NATO's integrated military structure it decided not to participate in the Nuclear Planning Group deliberations, and, unlike the United Kingdom's nuclear forces, are not presumed to be automatically available (the Deterrence and Defense Posture Review designated these weapons as "assigned" to NATO. There are no nuclear weapons assigned to NATO as they remain under the operational control of the nuclear weapon states. The term was used to differentiate U.S. and UK weapons available to NATO and French weapons which are not.)

Review (DDPR), reaffirmed these long-standing arrangements for risk and responsibility sharing in nuclear deterrence. Importantly, the DDPR further stated that “Nuclear weapons are a core component of NATO’s overall capabilities for deterrence and defense alongside conventional and missile defense forces. The review has shown that the Alliance’s nuclear force posture currently meets the criteria for an effective deterrence and defense posture.”<sup>10</sup> In other words, the DDPR examined a number of alternative methods for sharing the risks and responsibilities of the presence of U.S. nuclear weapons in Europe and concluded the current posture remains the most effective. Nevertheless, as stated in the DDPR, NATO committed to continuously search for ways in which all Allies can effectively participate and further bolster deterrence as a core element of collective defense and thus, in so doing, substantially contribute to the indivisible security of the Alliance.

Allies also agreed that U.S. nuclear weapons based in Europe send a more potent deterrent message about U.S. commitments than reliance solely on U.S. nuclear weapons deployed at sea or based in North America. With the U.S. nuclear weapons presence in Europe, extensive nuclear risk and responsibility sharing, and consultative arrangements for decision making, the Alliance has greater confidence in its strength and cohesion than it would have without these interrelated attributes—and greater confidence that adversaries will recognize NATO’s resolve and capabilities.

One concern often expressed is the ability of Allies to influence U.S. proposals to Russia on transparency and confidence building measures due to the fact that the object of such negotiations are U.S. and Russian owned and controlled assets. Consequently, an important part of U.S. extended deterrence security guarantees to Allies, which is an integral part of NATO’s nuclear posture, is the commitment of the U.S. to consult with and inform them with regard to U.S.-Russia bilateral negotiations, preferably prior to any agreed outcome.

That said, Allies are, however, becoming increasingly less capable of effective military action, spending less on military forces and cutting back on existing conventional military capabilities. The 2010 Strategic Concept called for “the ability to sustain concurrent major joint operations and several smaller operations for collective defense and crisis response...” The NATO-led intervention in Libya in 2011 suggests that the conventional military capabilities of the Allies fall far short of this level of ambition. Robert Gates, the then U.S. Secretary of Defense, said in June 2011:

Libya has just hammered home the consequences of many years of underinvestment: If even our biggest allies are beginning to feel the stress and strain, where the hell would we have been if we’d actually had to deal with the Soviets?... For God’s sake, this is Gaddafi, this isn’t some big power. The fact that there are challenges in sustaining just an air campaign even for 90 days is, I think, revealing.<sup>11</sup>

This has implications for NATO’s nuclear posture since any reduction or adjustment of that posture would need to be “re-balanced” with conventional forces. At the 2014 Wales Summit,

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<sup>10</sup>North Atlantic Council, “Deterrence and Defence Posture Review,” May 20, 2012, para. 8. Available at: [http://www.nato.int/cps/en/natolive/official\\_texts\\_87597.htm](http://www.nato.int/cps/en/natolive/official_texts_87597.htm).

<sup>11</sup> Quoted in Peter Spiegel, “Last of the Cold Warriors: Robert Gates’ Parting Shots at Europe,” *Financial Times*, June 28, 2011.

Allies re-committed themselves to spending 2% of GDP on defense, established a 4000 man Very High Readiness Joint Task Force, bolstered the Baltic air defense mission, and the U.S. agreed to a \$1 billion European Reassurance Initiative to finance rotating U.S. forces, air and ground, to eastern Europe for training and exercises. However, due to budget austerity measures, host UK “spending for 2016/17 is due to fall to £36.bn, equivalent to 1.85% of GDP.”<sup>12</sup> Italy and Germany are cutting their military budgets with only Poland, Latvia and Lithuania increasing their military spending to meet the 2% defense spending goal. As many as 9 NATO countries may spend less than 1% of GDP on defense despite the current security and stability dangers Allies recognized at the 2014 Wales Summit when they committed to the 2% spending goal.<sup>13</sup> Given past promises broken on defense spending, one can’t help but remain skeptical regarding the Alliance’s resolve to fully implement these promises. Even so, there was no move to readjust NATO’s current nuclear posture.<sup>14</sup>

## II. NATO’s Support for Arms Control and Disarmament

Although NATO itself has never been a party to an arms control agreement, negotiations and proposals concerning constraints on military forces and activities have been elements of the security and defense strategies of NATO Allies since the 1950s. Indeed, “contributing actively to arms control, non-proliferation and disarmament” as an element of cooperative security is a core Alliance task.<sup>15</sup> The DDPR also examined the utility of NATO’s posture vis-à-vis arms control, disarmament and non-proliferation initiatives, and confirmed the important role these measures have to play in maintaining peace and security complementing NATO’s deterrence and defense posture—in essence the “two track” Harmel approach. Despite trepidations over Russian actions vis-à-vis Georgia and elsewhere, NATO leaders agreed to further engage with Russia on transparency and confidence building measures related specifically to U.S./NATO and Russian non-strategic nuclear weapons (NSNWs).<sup>16</sup>

The Alliance’s decision was motivated by several considerations. First of all, work on these measures brought together NATO members with different perspectives on the role of nuclear weapons, particularly with regard to U.S. NSNW based in Europe. It also provided a common way forward for those Allies calling for further and “bolder” reductions or even complete withdrawal of U.S. weapons from Europe and those that favored the maintenance of the status quo. Whatever position particular Allies advocated none called for unilateral withdrawal

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<sup>12</sup>Richard Norton-Taylor, “Ignore US and Nato - cuts in UK defence budget could be a good thing,” The Guardian, March 25, 2015; Available at: <http://www.theguardian.com/news/defence-and-security-blog/2015/mar/16/ignore-us-and-nato-cuts-in-uk-defence-budget-could-be-a-good-thing>

<sup>13</sup> Jonathan Beale, “Nato defence spending falls despite promises to reverse cuts,” BBC News, February 26, 2015; Available at: <http://www.bbc.com/news/world-31619553>

<sup>14</sup> North Atlantic Council, Wales Summit Declaration, 5 September 2014; paras. 49, 50; available at: [http://www.nato.int/cps/en/natohq/official\\_texts\\_112964.htm](http://www.nato.int/cps/en/natohq/official_texts_112964.htm).

<sup>15</sup> North Atlantic Council, “Strategic Concept,” November 19, 2010, para 4; available at: [http://www.nato.int/cps/en/natolive/official\\_texts\\_27433.htm](http://www.nato.int/cps/en/natolive/official_texts_27433.htm).

<sup>16</sup> “Active Engagement, Modern Defense: Strategic Concept for the Defense and Security of the Members of the North Atlantic Treaty Organization Adopted by Heads of State and Government at the NATO Summit in Lisbon 19–20 November 2010,” [www.nato.int/strategic-concept/pdf/Strat\\_Concept\\_web\\_en.pdf](http://www.nato.int/strategic-concept/pdf/Strat_Concept_web_en.pdf); “Deterrence and Defense Posture Review,” Press Release (2012) 063, issued on 20 May 2012, [www.nato.int/cps/en/natolive/official\\_texts\\_87597.htm?mode=pressrelease](http://www.nato.int/cps/en/natolive/official_texts_87597.htm?mode=pressrelease).

preferring “reciprocal” quid pro quo measures that would address Russia’s overwhelming superiority in numbers of NSNW.

As tasked by the DDPR, NATO worked on developing possible confidence and security building measures (CSBM) options. Work on CSBMs was perceived as an element of preparing for an eventual U.S.–Russia arms control process encompassing NSNWs. Confidence-building measures were also seen as useful in terms of exploring definitional difficulties related to those weapons,<sup>17</sup> and legal and practical challenges of verification of existing arsenals of non-deployed but operatively deployable warheads kept in storage, particularly with regard to NSNWs stored/deployed to Europe.

Last but not least, work on transparency and confidence-building was also seen as a tool for alleviating uncertainties and concerns related to some elements of the Russian nuclear posture, including its alleged doctrine of nuclear de-escalation (i.e., using NSNWs to stop conventional forces and thus end the conflict), and size and location of Russia’s NSNW arsenal. From a broader perspective, it is also seen as a means of creating additional space for political and military cooperation, including expanding interactions between NATO and Russian civilian and military officials.

Interestingly, these CSBM’s also have the potential to cause difficulties for the U.S. Information on numbers and past or current locations of NSNWs could raise de-classification issues, security concerns, and political sensitivities over non-nuclear weapon states roles in the nuclear mission. Likewise ambiguity on these issues is considered an inherent part of NATO and Russia’s deterrence posture.

After reviewing a number of proposals, NATO’s Arms Control, Disarmament and Non-Proliferation Committee has reportedly selected two Transparency and Confidence building Measure proposals for possible discussion with Russia:

1. Organization of NATO–Russia briefings or seminars on nuclear doctrines and
2. Coordinating unilateral or multilateral statements on nuclear policy.

These relatively modest options, culled from previous NATO-Russia work on CSBMS, demonstrate that even despite NATO’s declaratory openness, any progress on more comprehensive and intrusive measures, as further discussed below, will not be easy.<sup>18</sup>

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<sup>17</sup> NSNWs are also often referred to as tactical or theater nuclear weapons. The terms are often used interchangeably. Debate also swirls around the difference between “strategic” nuclear weapons and “non-strategic” nuclear weapons. One of the major challenges in negotiating reductions of NSNWs will be definitional.

<sup>18</sup> See O. Meier, S. Lunn, “Trapped: NATO, Russia, and the Problem of Tactical Nuclear Weapons,” *Arms Control Today*, January/February 2014, [https://www.armscontrol.org/act/2014\\_01-02/Trapped-NATO-Russia-and-the-Problemof-Tactical-Nuclear-Weapons](https://www.armscontrol.org/act/2014_01-02/Trapped-NATO-Russia-and-the-Problemof-Tactical-Nuclear-Weapons).

### III. Roadblocks to New NATO-Russia Transparency and Confidence Building Measures

Russia's perspective on any arms control and/or confidence-building measures related to NSNWs is very different from that of the NATO states.<sup>19</sup> Moscow does not see any reason to consider NSNW-related arms-control measures separately or to single out this particular category of weapons as long as its own concerns, such as the U.S. ballistic missile defense deployments in Europe or the development of long-range conventional precision-guided munitions, are not addressed appropriately. Also, for Russia, any talks on NSNW are conditional upon the withdrawal of all U.S. nuclear weapons from Europe to U.S. territory.

Clearly Russia and the U.S. disagree on acceptable terms for further nuclear arms reductions partly because their policies differ dramatically on the utility of nuclear weapons. In December 2012, the U.S. National Intelligence Council summed up this difference as follows: "Nuclear ambitions in the US and Russia over the last 20 years have evolved in opposite directions. Reducing the role of nuclear weapons in US security strategy is a U.S. objective, while Russia is pursuing new concepts and capabilities for expanding the role of nuclear weapons in its security strategy."<sup>20</sup>

Consequently, U.S. and Russian views on future negotiations on NSNW could not be starker. In a June 2013 speech, President Obama declared that "After a comprehensive review, I've determined that we can ensure the security of America and our allies, and maintain a strong and credible strategic deterrent, while reducing our deployed strategic nuclear weapons by up to one-third. And I intend to seek negotiated cuts with Russia to move beyond Cold War nuclear postures."<sup>21</sup> This "vision" was enthusiastically embraced by NATO Allies. Contrast that with President Putin's statement in 2012 that "We should not tempt anyone by allowing ourselves to be weak. We will, under no circumstances, surrender our strategic deterrent capability. Indeed, we will strengthen it."<sup>22</sup>

Russian officials responded to President Obama's initiative by repeating a list of preconditions for further negotiations including the removal of all US NSNW from Europe, and the participation of other nuclear weapons states in the reductions negotiations and process.<sup>23</sup> Another senior official said that the negotiations should include not only the five NPT-recognized nuclear weapon states but "all states which in fact possess nuclear weapons." He reiterated the Russian position that the negotiations should encompass "the entire complex of factors that influence...strategic stability," such as missile defense, weapons in space and "a

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<sup>19</sup> See A. Zagorski, *Russia's Tactical Nuclear Weapons: Posture, Politics and Arms Control*, Hamburger Beiträge zur Friedensforschung und Sicherheitspolitik, Heft 156, IFSH, Hamburg, 2011; "The Future of Non-strategic Nuclear Weapons in Europe: Options Available," *Security Index: A Russian Journal on International Security*, vol. 19, no. 2, 2013.

<sup>20</sup> U.S. National Intelligence Council, *Global Trends 2030: Alternative Worlds* (Washington, DC; National Intelligence Council, December 2012, 69, available at: [www.dni.gov/index.php/about/organization/global-trends-2030](http://www.dni.gov/index.php/about/organization/global-trends-2030).

<sup>21</sup> President Obama, remarks at the Brandenburg Gate, Berlin, German, June 19, 2013, available at: [www.whitehouse.gov/the-press-office/2013/06/19/remarks-president-obama-brandenburg-gate-berlin-germany](http://www.whitehouse.gov/the-press-office/2013/06/19/remarks-president-obama-brandenburg-gate-berlin-germany).

<sup>22</sup> Vladimir Putin, "Being Strong: Why Russia Needs to Rebuild its Military," *Foreign Policy*, February 21, 2012, available at: <http://foreignpolicy.com/2012/02/21/being-strong/>.

<sup>23</sup> Pavel Felgenhauer, "Obama's Nuclear Cuts Initiative Meets Frosty Response in Moscow," *Eurasia Daily Monitor* 10, no. 117 (June 20, 2013).

serious imbalance in the sphere of conventional weapons in Europe.”<sup>24</sup> Recently, at the 2015 Non-Proliferation Treaty Review Conference, a senior Russian official even suggested that Russia may have to increase the size of its nuclear arsenal in response to alleged U.S. “provocations,” which included: “U.S. missile defense program, the U.S. refusal to negotiate on the ban on weapons in outer space, the U.S. military’s Prompt Global Strike (PGS) system, Washington’s de facto refusal to ratify the Comprehensive Test Ban Treaty, and the serious imbalance in conventional weapons in Europe.”<sup>25</sup>

While Russia piled on pre-conditions for beginning discussions on NSNWs, Russian actions vis-à-vis Georgia and Ukraine has resulted in growing tensions and mistrust between Russia and NATO culminating in the suspension of the NATO-Russia Council (NRC) dialogue, and, for the near term greatly diminishing the probability of any official future work on CSBMs.

The deteriorating state of relations was evident at the 2014 NATO Wales Summit with the Alliance condemning Russia’s “escalating and illegal military intervention in Ukraine, [and] its illegitimate occupation of Crimea.”<sup>26</sup> Further, the Alliance, in subsequently suspending all work in the NRC, also pointed out that “Russia’s pattern of disregard for international law, including the UN Charter; its behavior towards Georgia and the Republic of Moldova; its violation of fundamental European security arrangements and commitments, including those in the Helsinki Final Act; its long-standing non-implementation of the Conventional Armed Forces in Europe Treaty (CFE); and its use of military and other instruments to coerce neighbors. This threatens the rules-based international order and challenges Euro-Atlantic security.”<sup>27</sup>

#### **IV. Prospects for Future Work on NATO-Russia Transparency and Confidence Building Measures**

While criticizing Russia for breaching its commitments, violating international law, and “breaking the trust at the core of our cooperation,” NATO nevertheless continues to believe in continuing a “strategic discussion” regarding Euro-Atlantic security, and the importance of having a strategic “partnership” with Russia that would include transparency and confidence building measures. This is contingent, however, on a constructive change in Russia’s actions demonstrating compliance with international law and Russia’s international obligations and responsibilities. As stated in Wales:

We continue to believe that a partnership between NATO and Russia based on respect for international law would be of strategic value. **We continue to aspire to a cooperative, constructive relationship with Russia, including reciprocal confidence building and transparency measures and increased mutual understanding of NATO’s and Russia’s non-strategic nuclear force postures in Europe, based on our common**

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<sup>24</sup> Alexander Yakovenko, “Is it Possible to Make a Nuclear-free World?,” June 28, 2013, <http://rt.com/op-edge/nuclear-free-obama-berlin-399/>.

<sup>25</sup> Zachary Keck, “Russia Threatens to Build More Nuclear Weapons,” *The National Interest*, May 18, 2015; available at: <http://nationalinterest.org/blog/the-buzz/russia-threatens-build-more-nuclear-weapons-12912>.

<sup>26</sup> North Atlantic Council, Wales Summit Declaration, 5 September 2014; para. 16; available at: [http://www.nato.int/cps/en/natohq/official\\_texts\\_112964.htm](http://www.nato.int/cps/en/natohq/official_texts_112964.htm).

<sup>27</sup> *Id.* at para 18.

**security concerns and interests, in a Europe where each country freely chooses its future.** We regret that the conditions for that relationship do not currently exist. As a result, NATO's decision to suspend all practical civilian and military cooperation between NATO and Russia remains in place. Political channels of communication, however, remain open. (Emphasis added)<sup>28</sup>

The opportunity to advance CSBMs related to NSNW are, for the moment, obviously low due to the divergent approaches of the NATO member states and Russia, and the continued deterioration of Russia–NATO relations due to the ongoing crisis in and around Ukraine which further complicates the picture further. NATO–Russia relations have entered a period of turmoil in which both sides are focused more on sending signals of military strength rather than on transparency and confidence-building, with political-level dialogue and practical cooperation limited to a bare minimum. The situation has been further exacerbated by Russian “statements about possible future stationing of nuclear weapons and delivery systems in Crimea.” Consequently, at a May 2015 NATO Foreign Ministers’ meeting, the Alliance again strongly condemned “Russia’s aggressive actions and continued violation of international law and its international obligations.... [calling] on Russia to fully abide by international law.”<sup>29</sup>

Since the inception of the NATO-Russia Council (NRC)<sup>30</sup> transparency and confidence building measures, particularly with respect with NSNW, have been an important part of the developing relationship between NATO and Russia, and a demonstration of NATO’s support for transparency and confidence building measures. NATO’s 2010 Strategic Concept (Art. 26) makes it clear that:

In any future reductions, our aim should be to seek Russian agreement to increase transparency on its nuclear weapons in Europe and relocate these weapons away from the territory of NATO members. Any further steps must take into account the disparity with the greater Russian stockpiles of short–range nuclear weapons.<sup>31</sup>

Likewise in the 2012 DDPR (Art. 25):

Allies look forward to continuing to develop and exchange transparency and confidence-building ideas with the Russian Federation in the NATO-Russia Council, with the goal of developing detailed proposals on and increasing mutual understanding of NATO’s and Russia’s non-strategic nuclear force postures in Europe.<sup>32</sup>

In keeping with the imperative of follow-on negotiations after new START and the Alliance mandate in the Strategic Concept to develop a set of concrete proposals, NATO Allies have subsequently proposed a broad set of measures to achieve greater transparency, mutual trust and

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<sup>28</sup> *Id.* at para. 22.

<sup>29</sup> NATO Foreign Ministers’ Meeting, “Joint Statement of the NATO-Ukraine Commission,” 13 May 2015; available at: [http://www.nato.int/cps/en/natohq/official\\_texts\\_119425.htm](http://www.nato.int/cps/en/natohq/official_texts_119425.htm).

<sup>30</sup> The NRC was established at the NATO-Russia Summit in Rome on 28 May 2002 by the Declaration on “NATO-Russia Relations: a New Quality”. The Rome Declaration builds on the goals and principles of the 1997 NATO-Russia Founding Act on Mutual Relations, Cooperation and Security, which remains the formal basis for NATO-Russia relations.

<sup>31</sup> Available at: <http://www.nato.int/lisbon2010/strategic-concept-2010-eng.pdf>.

<sup>32</sup> Available at: [http://www.nato.int/cps/en/natolive/official\\_texts\\_87597.htm](http://www.nato.int/cps/en/natolive/official_texts_87597.htm).

confidence regarding NSNWs. Discussion on these measures have been within the framework of the NRC which, due to the Ukrainian invasion by Russia, has currently suspended any further work below the ambassadorial level.

The Alliance recognizes that there remains a substantial number of NSNWs in Europe. Consequently, there may be utility in having increased transparency concerning numbers, types, locations, command arrangements, operational status, and level of storage security. For obvious security reasons, however, there are limits to how much information might be provided particularly since deliberate ambiguity in many aspects of NATO and Russia's nuclear posture is viewed as enhancing deterrence.

A broad range of transparency and confidence building measures have already been proposed and incorporated into, initially, the NRC's Nuclear Experts Group, which was subsequently merged into the NRC Defense, Transparency, Strategy and Reform (DTSR) Committee program of activities. The Nuclear Experts Group developed and produced a comprehensive "plan of action" for transparency and confidence building measures with short, mid, and long term programs of work. Before merging into the DTSR Committee the Group aggressively pursued agreed "short-term" measures, which included an agreed dictionary of nuclear-related terms, establishing and conducting a series of nuclear incident/accident safety and security exercises,<sup>33</sup> and holding twice-a-year seminars on nuclear doctrine and strategy.<sup>34</sup> Details on a number of other agreed short term and mid-term measures were under discussion which, in a different political climate, continue to hold promise for expanding transparency and confidence building. These included but are not limited to the following:

1. Reciprocal information exchange of safety and security systems used at nuclear sites (displays, presentations, visits).
2. Officer exchange visits and programs.
3. Information exchanges about historical and current numbers of nuclear weapons and delivery systems.

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<sup>33</sup> NRC nuclear experts have participated since 2004 in four such exercises aimed at increasing transparency, developing a common understanding of nuclear weapons safety procedures and mechanisms, and building confidence on the full range of capabilities to respond effectively to emergencies involving nuclear weapons. Each nuclear weapon state held an exercise with Russia first in 2004 followed by the UK in 2006, the U.S. and France in 2007. In addition, the NRC held a seminar on incident/accident lessons learned in 2007, and another seminar on responses to improvised radiological weapons in 2010. A follow-on exercise was planned in which the four nuclear weapon states would collaborate in response to a nuclear incident on the territory of a non-nuclear weapon state. However, Russian insistence that it be held on the territory of one of the Allies flying dual-capable (nuclear) aircraft (DCA) when only a non-DCA state (Czech Republic) volunteered derailed the process.

<sup>34</sup> Seminars on nuclear doctrines and strategies have been previously conducted with the last such session in June 2013 at The Hague. See "Netherlands Foreign Minister Discusses Nuclear Seminar," NATO-Russia Council, 1 July 2013, available at: [www.nato-russia-council.info/en/articles/20130701-nrc-nuclear-seminar](http://www.nato-russia-council.info/en/articles/20130701-nrc-nuclear-seminar). The author, as a NATO official, organized three such sessions in which the NATO nuclear states (France, UK and the US) and Russia described in rare detail their nuclear policies and provided a very general description of their nuclear posture. It was agreed that these sessions would be held once every two years which, for obvious reasons, have now been suspended.

4. Briefings to the NRC on collaborative work by Russia and the US on new verification techniques, including joint-work on non-intrusive verification/monitoring technologies.

Most of the other measures proposed in the course of the Group's work were considered long-term goals contingent on a continuing and robust collaborative and cooperative security vision as contemplated in the 1997 NATO-Russia Founding Act:

NATO and Russia, based on an enduring political commitment undertaken at the highest political level, will build together a lasting and inclusive peace in the Euro-Atlantic area on the principles of democracy and cooperative security.....Proceeding from the principle that the security of all states in the Euro-Atlantic community is indivisible, NATO and Russia will work together to contribute to the establishment in Europe of common and comprehensive security based on the allegiance to shared values, commitments and norms of behavior in the interests of all states... NATO and Russia will seek the widest possible cooperation among participating States of the OSCE with the aim of creating in Europe a common space of security and stability, without dividing lines or spheres of influence limiting the sovereignty of any state.<sup>35</sup>

#### **IV. Concluding Thoughts**

In the coldest days of the Cold War, the United States and Russia worked together to lay the foundations of the current global nuclear order. And in better days, we worked together to strengthen it, by creating communication, transparency and confidence building measures to stabilize our relationship, reducing our weapons stockpiles, strengthening the IAEA safeguards regime, and preventing nuclear proliferation. With the end of the Cold War NATO and Russia developed a new relationship—partnership if you will—based on mutual interest in maintaining peace and security within the Euro-Atlantic region, a relationship that NATO expected to be one of cooperation and collaboration, instead of confrontation, where arms control and CSBMs would play a leading role eventually leading to a world free of nuclear weapons. That world view no longer appears on the immediate horizon.

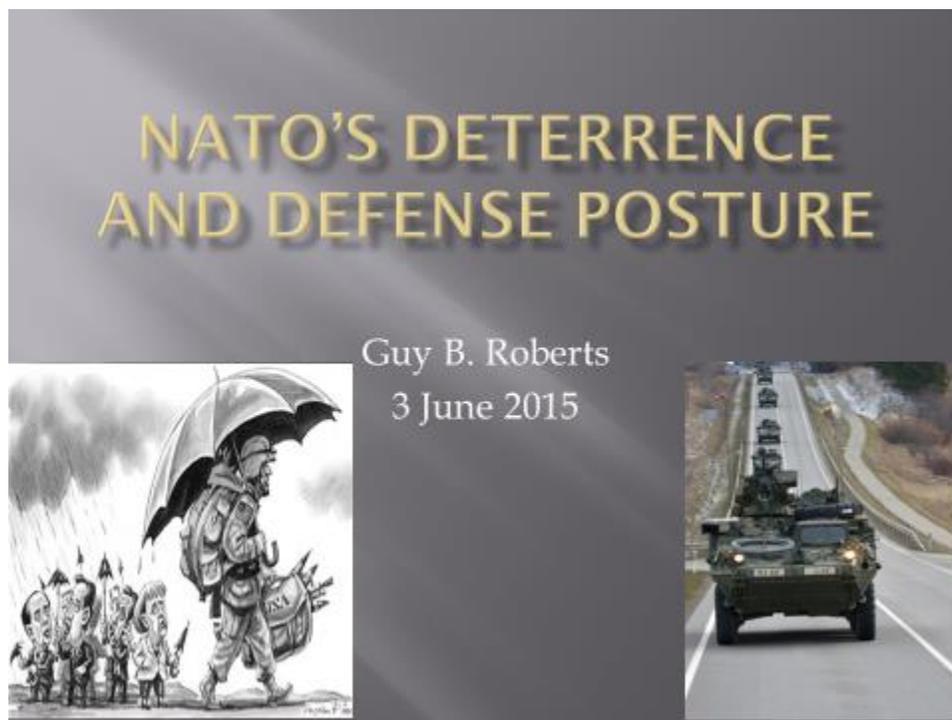
The unfortunate economic and human costs of the current crisis – for Russia, Ukraine, and Europe – are self-evident and growing. But we cannot lose sight of the opportunity costs as well. Nowhere are these more vivid than in the nuclear arena. As the world's two largest nuclear powers, the United States and Russia should continue to have a shared sense of responsibility for safeguarding the nuclear order, an order where NATO's nuclear deterrence posture figures prominently in maintaining peace and security as well as preventing the further proliferation of nuclear weapons in Europe and beyond. The wider cause of global nuclear order will be set back significantly if we can't find a way to exercise our shared responsibility to help keep the world safe and secure from nuclear dangers.

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<sup>35</sup> "Founding Act on Mutual Relations, Cooperation and Security Between the North Atlantic Treaty Organization and the Russian Federation," May 27, 1997; available at: [http://www.nato.int/cps/en/natolive/official\\_texts\\_25468.htm](http://www.nato.int/cps/en/natolive/official_texts_25468.htm).

One can safely conclude that until the current crisis in Ukraine is successfully overcome, any proposals related to NSNW CSBMs, no matter how anodyne and modest, will be still born as long as the work of the NATO–Russia Council is limited to ambassadorial-level meetings and as long as cooperation between NATO, the U.S. and Russia is suspended.<sup>36</sup> Still, there is a need for work on different and innovative CSBMs so that practical and reasonable measures could be in place when the political momentum for agreement on such measures is once again viable.

In that regard, our Track 2 discussions offer a platform for moving work on NSNW CSBMs further, even during the current unfavorable political conditions, to explore the merits, feasibility and mutual benefits of prospective measures, and, in doing so, setting the stage for a moment when the issue is back on the agenda and the political window of opportunity opens again. Indeed, while official communication channels remain paralyzed the relative value of our Track 2 efforts are likely to grow as we work to prepare the ground for future Track 1 initiatives and build broad support for future arms control agreements with the aim of creating and preserving a “common space of security and stability” within the Euro-Atlantic region.



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<sup>36</sup> On 1 April 2014, as a response to Russian actions in Ukraine, NATO members limited the NATO–Russia Council Dialogue to the ambassadorial level and above and suspended practical and military cooperation with Russia. “Measures following the NATO ministers’ decision to suspend all practical cooperation with Russia,” 7 April 2014, [www.nato.int/cps/en/natolive/news\\_108902.htm](http://www.nato.int/cps/en/natolive/news_108902.htm).

## NATO's Future "Dim if not Dismal"

- ❑ Post Afghanistan; strong resistance to new out-of-area missions
- ❑ European publics do not share America's deep concern over a nuclear Iran.
- ❑ Over 70 percent of all NATO defense spending now comes from the United States. (+/- 5%GDP)
  - Capability gap already huge and growing
- ❑ Average European spending on defense is less than 1.5% of GDP (9 will likely be under 1% this year).
- ❑ Increasing concern over U.S. commitment :
  - Asia Pivot
  - "Lead from behind"
  - Major decrease in conventional forces but \$1 Billion European Reassurance Initiative and Wales Summit commitment by Allies may reverse current trend.

## Post Cold War NATO Deterrence and Defense Posture

- ❑ Since 1991 NATO has increasingly relied on conventional and missile defense capabilities to supplement its nuclear deterrence posture.
- ❑ 2012 Chicago Summit and the Deterrence and Defense Posture Review (DDPR) focused on these three categories of capabilities. The DDPR re-confirmed nuclear weapons as a "core component" of its posture and the importance of burden-sharing and consultation.

## 2010 Strategic Concept: Current Security Environment

1999 Strategic Concept noted “the existence of powerful nuclear forces outside the Alliance also constitutes a significant factor which the Alliance has to take into account if security and stability in the Euro-Atlantic area are to be maintained.”

“I do think the principles of the NATO discussion [on NATO’s nuclear posture] are already clear: first, that no Ally will take unilateral decisions; second, that as long as there are nuclear weapons in the world, NATO will need a nuclear deterrent.”

-- NATO Secretary General Rasmussen

## NATO's Nuclear Sharing Arrangements

- ❑ NATO’s Strategic Concept stresses the indivisibility of the security of Europe with that of North America
- ❑ Presence of US nuclear forces in Europe remains vital to the security of Europe
- ❑ European-based US nuclear forces are a central element of NATO’s strategy of war prevention
- ❑ Provides for the sharing of nuclear risks and responsibilities within Alliance and demonstrates unity and collective security

## Burden Sharing



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## Future Changes to NATO's Deterrence Posture

“In any future reductions, our aim should be to seek Russian agreement to increase transparency on its nuclear weapons in Europe and relocate these weapons away from the territory of NATO members. Any further steps must take into account the disparity with the greater Russian stockpiles of short-range nuclear weapons.”

-- 2010 Strategic Concept, para. 26

## 2012 Summit DDPR Results

- Endorse concept of burden sharing and consultation
- Alliance cohesion and solidarity strengthen overall deterrence posture
- Allies assume security roles, financial costs and political risks and responsibilities
- Allies have a direct role in maintaining NATO's nuclear posture, better understanding of nuclear roles and policies, and have a say in nuclear planning,

## DDPR: NATO is a Nuclear Alliance

“Consistent with our commitment to remain a nuclear alliance for as long as nuclear weapons exist, Allies agree that the NAC will task the appropriate committees to develop concepts for how to ensure the broadest possible participation of Allies concerned in their nuclear sharing arrangements, .....

- ☐ Strategic Concept and DDPR link any future withdrawals of U.S. nuclear weapons to “reciprocal steps by Russia.”

## 2012 Summit Declaration: DDPR on CSBMs

“Allies look forward to continuing to develop and exchange transparency and confidence-building ideas with the Russian Federation in the NATO-Russia Council, with the goal of developing detailed proposals on and increasing mutual understanding of NATO’s and Russia’s non-strategic nuclear force postures in Europe.”

## **Session II: Transparency Pros and Cons**

### **Eugene Miasnikov**

Before making concrete comments about the ideas for discussion in our program, I'd like to talk a little bit about some fundamental things. Therefore, let me start the introduction to the session with some observations about the history of U.S.-Russian dialog on transparency of non-strategic nuclear weapons.

Bush-Gorbachev initiatives of early 1990s, usually called as PNIs, happened not on an empty place. Both sides perceived that their nuclear arsenals are exceedingly excessive.

At that time Russia desperately needed financial assistance to maintain safety and security of the nuclear arsenal inherited from the Soviet Union. Nunn-Lugar projects were originated because there was a formidable task to safely move the previously deployed nuclear weapons to central storage facilities and to securely keep them there until most of them would be dismantled.

Among other things, one of the reasons why Russia entered the dialog on transparency of nuclear warheads was ensuring irreversibility of reductions envisaged by START Treaty. That is why this dialog became possible.

But, perhaps, the most important thing was that PNIs and other transparency initiatives discussed later were implemented during the period, when the Russian leadership had a vision how Russia would integrate into the western political and economical institutions. Such a vision unfortunately does not exist anymore.

However, even during the period of the warmest U.S. - Russian relations transparency measures regarding NSNWs did not go much further PNIs and lab-to lab research work.

Why? One of the explanations could be that there is huge difference in attitudes toward transparency in the U.S. and Russia. If transparency is perceived in the U.S. positively in general, Russian perceptions are very different for both cultural and political reasons. At worst, transparency is perceived in Russia as a "Trojan horse", at best - as a value questionable from the national security prospective.

Transparency regarding military issues (and, in particular, nuclear issues) was most of all considered in Russia not as a "new value" intrinsic to a democratic society as many of my American colleagues might perceive, but as a concession to the West, a price for Russia's integration into the western institutions. As the illusions of the Russian leadership about the U.S.-Russian cooperative partnership disappeared, it lost interest toward transparency and arms control.

So, what is the bottom line? One cannot enter the same river twice. One has to admit that factors, that paved the way to the joint work on transparency of nuclear warheads in the past, do not exist anymore. There is a need to find a new basis, new bedrock for resumption of this work.

Hopefully, there will be no need to start from a scratch, but if new promising fundamental ideas for cooperation in this field are not found in the near future, the previous experience will most likely be lost. Unfortunately, this idea is missing in the document prepared for our discussion. It seems to me that it is the key challenge for us and it should be the focus for our discussion.

Of course, resumption of previous work on transparency of nuclear weapons requires sufficient amount of mutual trust between the parties. However, one has to overcome not only the inadequate degree of trust between the two sides, but also differences in legislation and in definitions of what constitutes sensitive information.

The existing trends are not promising. You may have heard that just a week ago President Putin signed an order that significantly broadens the list of items considered to be a state secret. Information about organization of forces providing security of special facilities as well as their capabilities and methods are now a state secret. The order does not give any specifics, but I would not be surprised to learn, that it also covers those special facilities where nuclear weapons are stored. If so, my Russian colleagues would be unable even to talk openly about possible transparency measures on such facilities.

Now, let me make a few comments with regard to eleven ideas for developing transparency measures mentioned in the program. Most of them are not new. Some are more than a decade old and relevant to the more cooperative environment between the U.S. and Russia. However, this fact does not preclude revisiting these ideas and adopting them to the current situation.

1) Among the proposed ideas I found the most interesting the one on discussing remote sensing technologies that may enhance transparency (#8). Particularly notable is a statement made recently by General Ryzhkov, Head of the Directorate of Arms Control Treaties Implementation of the Russian MoD. He said that future arms control should be based more on confidence measures and national technical means (NTMs) rather than on inspections.<sup>1</sup> Therefore discussing remote sensing technologies could be of interest to Russia, if Russia wants to put more emphasis on NTMs in the implementation of arms control agreements in future.

2) Idea # 4. I believe, that a discussion on definitions is doomed to failure unless a practical goal of such a discussion is clearly set. Definitions in existing treaties (e.g. START) have been worked out because the sides set up a common goal and had agreed the frameworks for the treaties. Definitions were always secondary, and they were always changing as new treaties were negotiated. Just to give an example, there is a significant difference between the meanings of “deployed warheads” in the old START (1991) and new START (2010).

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<sup>1</sup> <http://www.vpk-news.ru/articles/25265>

3) Idea # 10. I think, that Professor Rogov made a good point yesterday at the dinner on the need to rethink definitions of weapons. There is a way to avoid the question on how to differentiate strategic from non-strategic warheads. Instead of such an approach, we may divide existing nuclear arsenals on “deployed” and “non-deployed” (kept on storage) categories. Apparently, verification concepts and control procedures toward these suggested two categories need to be entirely different. There is more commonality between verifying non-deployed non-strategic and strategic warheads rather than verifying deployed and non-deployed strategic warheads. Such an approach could also facilitate involving other nuclear states in a transparent multilateral nuclear reductions process.

4) Ideas # 1, 2, 3. It is not realistic to expect that each of the measures proposed in these ideas can be implemented at once. The sides could start building mutual transparency by small steps. For example, U.S. and Russia could begin with selected types or numbers of warheads slated for elimination. On the first phase the goal of transparency measures could be verified destruction of those warheads. Such kind of work could promote resumption of lab-to-lab and military-to-military cooperation and gradual build-up of mutual confidence necessary for further steps like sensitive data exchanges.

5) The idea #3 mentions transparency about sea-launched cruise missiles. The case of nuclear SLCMs may turn out to be the most complicated, because Russia and the U.S. had previously disagreements on what type of category SLCMs should fall to. For a long time Russia considered nuclear SLCMs as strategic systems. The U.S objected this approach. The compromise in START (1991) was that the sides agreed to exchange data on nuclear SLCM deployments annually, though SLCMs did not become the subject of the treaty. Moreover, Helsinki agreements of 1997 clearly articulated a distinction between tactical nuclear weapons and nuclear SLCMs. Taking into account frequently raised Russia’s concerns about U.S. conventional sea launched cruise missiles, the solution of the problem needs to include transparency measures regarding conventional SLCMs as well.

And finally, in addition to the ideas mentioned in the document, let me propose another one. U.S. and Russia could make unilateral commitments not to conduct research, development and manufacture of new types of non-strategic weapons. Even if such commitments are made as unilateral statements, and no verification procedures are assumed, they could facilitate creating a healthier environment for future discussion on transparency measures with regard to non-strategic nuclear weapons.

**Session II: Transparency Pros and Cons**  
**Sergey Rogov**

**Strategic Stability and Non-Strategic Nuclear Weapons**

The arrival of nuclear missile weapons as a factor in the bi-polar system of international relations fundamentally changed the concept of strategic military balance, reducing it to parity in intercontinental nuclear weapons (range of action over 5,500 km) between the two superpowers, the United States and the USSR. These new weapons could provide decisive results in a short time by annihilating half the population and two-thirds of the industrial potential in the enemy country (mutual assured destruction).

This narrow definition was limited to warheads carried by intercontinental and submarine-launched ballistic missiles and heavy bombers. No attention was paid to medium- and short-range nuclear weapons, or to the giant stocks of conventional weapons that the United States and the USSR possessed. Furthermore, other countries' nuclear and non-nuclear weapons were also excluded from this scheme.

At the same time, this understanding also included limitations on anti-missile defense. This led to the narrow interpretation of the concept of "strategic stability" that became the basis for Soviet-American accords on nuclear weapons control. The SALT agreements and BMD Treaty of 1972 imposed quantitative limitations on START and strategic missile defense.

The model of "mutual nuclear deterrence", or "mutually assured destruction" (MAD) took shape in the Soviet-American relations by the early 1970s. It was codified in a system of arms control treaties including the SALT (START) and ABM agreements.

Arms control was expanded at the end of the Cold War. The INF Treaty was signed in 1987 and under it the two superpowers destroyed their land-based missiles that have a range of action from 500 to 5,500 km. In addition, Washington and Moscow in 1991 announced their unilateral, but parallel measures towards tactical nuclear weapons reduction. The multilateral Treaty on Conventional Armed Forces in Europe (CFE Treaty) was signed in 1990 to impose limitations on five types of conventional weapons (tanks, armored combat vehicles, artillery, combat aircraft and strike helicopters). Along with the United States and the USSR, the list of signatories included all NATO and Warsaw Treaty member countries on a parity basis. But no limitations were set on navy armaments, except for submarine-launched ballistic missiles.

**Broad Definition of Strategic Stability**

The MAD model survived the end of the Cold War and remains the basis of military-strategic relations between Russia and the United States. The new START Treaty, signed in 2010, does not revoke MAD, and in fact makes this model more lasting and stable.

This narrow definition of "strategic stability" persisted until recently, and this was registered in the new START Treaty that covered only traditional components of the strategic triad.

In the early 21st century, however, the military-strategic balance is not confined to strategic nuclear forces. Today, achieving decisive objectives in war (hitting a wide range of military targets

and economic areas, destroying political administration and military command systems) is possible using non-nuclear weapons. New non-nuclear weapons boast destructive capacities that are increasingly close to that of nuclear weapons. In the coming decades, strategic non-nuclear weapons will, it seems, mature to a point at which they are able to exert a considerable impact on the military-strategic balance. In fact, the United States takes the lead in creating strategic non-nuclear weapons.

It is significant that the first decade of this century saw the remit of the United States Strategic Command (USSTRATCOM) expand considerably as part of its fundamental, root and branch, reorganization. USSTRATCOM initially brought together the strategic nuclear forces of the U.S. Air Force and Navy. Its structure comprises the Joint Functional Component Command for Global Strike (JFCC-GS) that includes nuclear and non-nuclear weapons, the Joint Functional Component Command for Intelligence, Surveillance and Reconnaissance (JFCC-ISR), the United States Space Command (USSPACECOM), the Joint Functional Component Command for Integrated Missile Defense (JFCC IMD), the United States Cyber Command (USCYBERCOM) led by the director of the National Security Agency, among others.

In 2011 and 2012, official representatives of Russia and the United States held consultations on strategic stability. Certain differences came to the fore in their respective approaches.

The American side tends towards the narrow understanding of strategic stability that was accepted in the Cold War and chiefly involved the balance of strategic offensive nuclear forces. This approach is sometimes identified in the U.S. as “arms race stability,” requiring approximate parity in the size and composition of strategic nuclear forces. This is the approach that served as the foundation for the SALT, START and SORT treaties.

The American side proceeds from the premise that, in normalcy and crisis, both sides retain a considerable contingent of strategic nuclear forces and systems of command and control over nuclear forces in a position that makes it possible to survive the first disarming strike from the opposite side, and to retaliate with destructive force against a wide range of vital targets. Moreover, they raise the question of reducing the number of targets subject to this attack risk.

The Russian side defines “strategic stability” as a stable balance of overall military potential, including both offensive and defensive weapons. This is an extremely broad definition. Russia calls for refraining from any steps in building up military potentials, weapons development and deployment, troop deployment, the adoption and implementation of doctrines and concepts, formation and reconfiguration of military-political alliances, establishing military bases in foreign territories, and other actions that the other side could perceive as a threat to its national security.

They add that Russia will seek to involve other states, above all those with nuclear weapons, and those that have a stake in joint action to support security, in the process to build up strategic stability. The Russian side declares that any further steps in the area of nuclear weapons reduction and limitation should be multilateral.

Russia defines “strategic deterrence” as a set of measures intended to forestall or reduce any threat of destructive action from an aggressor state (or coalition of states). They add that nuclear deterrence is fundamental to maintaining strategic stability. Moreover, for the foreseeable future, nuclear weapons will remain an important factor in preventing emergence of nuclear conflicts and military conflicts involving conventional weapons that could be modified into nuclear ones. Under

its military doctrine, Russia asserts its right to use nuclear weapons to retaliate application of nuclear or other mass destruction weapons against it and/or its allies, and also in the event of conventional weapons used in an aggression against the Russian Federation that endangers the very survival of the state.

The Russian side, therefore, states that further nuclear arms reduction should be considered taking due account of the broader combination of factors that are key to strategic stability. These include, but are not limited to, BMD, PGS, ratification of the Comprehensive Nuclear Test-Ban Treaty, the threat of space-orbited weapons, and quantitative and qualitative imbalances in conventional weapons.

### **Problems**

It is therefore clear that there are considerable differences in the U.S. and Russian approaches to strategic stability. This is due to asymmetry in their military potentials and their national security interests.

The United States is prepared to opt for accords on nuclear weapons where the two countries have approximate parity. But Washington does not agree to rigid limitations in those areas where the United States has clear superiority. Moscow, meanwhile, is wary of threats to its nuclear potential from U.S. non-nuclear weapons and considers limitations in this area a priority.

The United States adheres to a narrow interpretation of strategic stability, suggesting it should be supported by legally binding bilateral agreements on further nuclear arms reductions, and also by political, but not legal, measures to achieve a certain degree of transparency in such areas as BMD, PGS, aerospace devices, and cyber space. When it comes to multilateral accords, the U.S. position is limited solely to non-proliferation of weapons of mass destruction.

Russia tends towards an extremely broad interpretation of strategic stability. Moscow is in no hurry to agree to new nuclear arms reductions, especially regarding tactical nuclear weapons (TNW). At the same time, the Russian side wants to achieve legally binding limitations on strategic non-nuclear military systems, an area in which it is lagging considerably behind the United States. Russia also advocates a military balance of forces established multilaterally under international law.

There are influential political groups in both countries that, as a matter of principle, reject any need to support strategic stability through arms control accords. For example, the Republican Party's stance leaves very little room for the ratification of a new disarmament treaty by the U.S. Senate. This further complicates diplomatic efforts to achieve a compromise acceptable to both Russia and the United States.

### **Road Map**

In order to analyze how the Russian-American dialogue on strategic stability can develop, we first need to understand whether the United States is prepared to conclude further legally binding agreements on strategic nuclear and non-nuclear arms control. If it is, then there are quite realistic prospects for strengthening strategic stability in both the narrow and broader senses. But, it is not, then strategic stability will start to erode. If no compromise is reached, arms control as a restraining mechanism could be consigned to "the dustbin of history."

It seems that the narrow interpretation of strategic stability that corresponded to the bi-polar world in the late 20<sup>th</sup> century, when there were two opposing superpowers, is now obsolete. The 21<sup>st</sup> century requires a broader understanding of strategic stability that corresponds to today's technological and geopolitical realities. Viewed conceptually, however, this issue requires serious analysis. Neither Russia nor the United States is currently prepared to seek political solutions covering all aspects of this broader interpretation of strategic stability.

The shift from the outdated, narrow concept of strategic stability that dominated in the late 20<sup>th</sup> century to a broader understanding that is relevant to today's realities could involve several stages.

The initial stage could involve the examination of prospects for further bilateral nuclear arms reductions by the United States and Russia. One reason is that other nuclear powers have refused to undertake any official commitments to limit their arsenals. It is not clear how states that have nuclear weapons but that are not recognized under the Nuclear Non-Proliferation Treaty (NPT) can be involved in the disarmament process.

The second stage could involve the three other "officially recognized" nuclear powers – France, the UK and China – in the treaty regime. They would have to agree to some sort of quantitative ceilings on nuclear weapons and to measures of verification and control. Even the most optimistic assessments do not suggest that this could happen any sooner than the end of the decade.

The third stage should involve efforts to include the "unofficial" nuclear powers – India, Pakistan, Israel and North Korea – in this nuclear arms control regime. But when and how this can be achieved is, for now, conjecture. This may require amendments to be made in the Non-Proliferation Treaty itself, and this is fraught with extremely dangerous consequences.

We should also remember that all other nuclear powers don't divide their nuclear arsenals into "strategic" and "non-strategic". That would make it difficult to find a common ground.

### **New Approaches Needed**

Further down the line, maintaining the military-strategic balance will necessitate some fundamentally new approaches to strategic offensive and defensive weapons. It would seem that in the 21<sup>st</sup> century, the arms control mechanism created during the Cold War based on legally binding accords (setting quantitative ceilings, and verification and control measures) is far from applicable when it comes to the possible regulation of the numerous components that comprise today's military-strategic balance at both a bilateral and multilateral level.

The traditional arms control mechanism can still be effective on nuclear weapons when it comes to Russia and the United States, as has been confirmed in the new START Treaty. That said, this mechanism does elide the two countries' non-strategic nuclear weapons. Theoretically, it could be possible to achieve new legally binding accords between Russia and the United States on nuclear weapons. It is, however, highly unlikely that it will be possible to achieve a new legally binding agreement on limits to anti-ballistic missile defense (ABM-2 Treaty). It is even less possible, or indeed necessary, to revive the CFE Treaty, although efforts should continue to reach accords on a new framework of international legal control over conventional armaments that involves all European countries.

Therefore, there is a clear need to develop new instruments to regulate the military-strategic balance and supplement preexisting legally binding accords. Supporting and strengthening the military-strategic stability is a process that should ensure the situation remains predictable, while also preventing any sudden shifts in the balance, ruling out unnecessary arms race expenditures, and forestalling the emergence and escalation of military-political crises.

These instruments could include confidence-building measures and enhanced transparency regarding particularly sensitive components of the military-strategic balance. The sides are surely aware of the need for restraint, and the importance of refraining from attempts to achieve superiority. As history indicates, this superiority is only ever fleeting in nature and risks igniting a new, and very dangerous, arms race.

We can anticipate that these measures could include unilateral, parallel steps at a bilateral level (for example, between Russia and the United States). These measures could relate to both quantitative parameters of certain types of weapons and the supply of information regarding their operational application. These measures could be adopted via political accords, rather than legal commitments under a treaty.

Of course, the Russian-American accords on nuclear arms reductions cannot be regarded as sufficient to uphold the military-strategic balance if we accept the broad definition of strategic stability, which has to deal with both non-nuclear strategic systems and the multi-polar nature of the world today. It is particularly important to be aware the stability of the military-strategic balance will be increasingly influenced by the need to avoid or dis-incentivize the militarization of space and the development of cyber weapons. Obviously, supporting strategic stability in the multi-polar world in the 21<sup>st</sup> century will require new efforts to neutralize serious threats arising in these areas of military rivalry.

Strategic stability in the world and the situation in particular relating to European security, for the coming decade, will depend directly on whether Russia and the U.S. together with other NATO member countries are able to resolve the Ukrainian crises through an operational cooperation mechanism.

### **Non-strategic (tactical) nuclear weapons**

There is a lot of discussion both in the U.S. and in Europe that Russia has a big advantage in this area. The Americans have 500 tactical nuclear warheads (200 out of them – in Europe). Russia, according to expert assessments, has about 2000. But there are important nuances here.

Russia has three categories of non-strategic nuclear warheads: for ABM and air defense systems, naval nuclear weapons and, finally, air bombs and short-range missiles. The U.S. has only air bombs. But development of B-61 bombs will complicate the distinction between “strategic” and “non-strategic” nuclear weapons.

The question is why should we count the Russian BMD and air defense nuclear warheads since they cannot be fired at Europe or other countries? The naval weapons are a special case: the U.S. has never agreed to limitations of naval weapons. The new SLCM developed by the U.S. is supposed to be dual capable.

Besides many Russian non-strategic nuclear weapons are situated in Siberia and the Far East and are not intended for use in the European theater.

If we are talking about the nuclear balance in Europe between Russia and NATO, then it should be taken into account that three nuclear states are members of NATO. Therefore, the British and French potential should be accounted for, but Paris and London are not willing to agree to nuclear reductions.

Why should not these issues be discussed in public? It could be proposed to launch negotiations on NATO's and Russia's nuclear arms in Europe, which do not fall under the START Treaty limitations, i.e. the U.S. tactical nuclear arms, as well as the British and French nuclear arms. Let NATO "squirm" and explain itself if Britain and France refuse to negotiate.

The goal should be some more transparency and confidence-building, some parallel steps and exchange of information. But terrorist threat would limit the range of such measures.

But legally binding obligations with on-site inspections seem impossible as long as there is no progress with other "baskets" of strategic stability.

### **INF Treaty**

In the United States, the debate has been stirred up that Russia is preparing to withdraw from that Treaty in connection with its testing of the "Rubezh" rocket system, which is an ICBM, but of a shorter range (accordingly, it can strike targets in the European theater). In principle, the flight trajectory can be also reduced in American ICBMs and SLBMs. Another accusation is related to the range of the "Iskander" cruise missile.

On the other hand Russia accuses the U.S. of several violations, including target-missiles, drones and Aegis Ashore. The U.S. Aegis Ashore missiles launchers MK-41 would be deployed in Poland and Romania. Offensive cruise and ballistic missiles can reach Moscow from Poland and Baltic states in a few minutes.

The Special Verification Commission should resume its work, but some of the key issues will require direct involvement of top officials.

The Collapse of the INF Treaty will jeopardize the implementation of the START Treaty and preclude any negotiations on NSNW.

### **Missile Defense**

After its withdrawal from the ABM Treaty in 2002, the George W. Bush Administration started in 2004 the deployment of GBI strategic interceptors in Alaska and later – in California. However, to a significant extent this step was gambling. Most of 16 GBI system tests failed, even though they were conducted following a simplified pattern (the launch time and trajectory of the target were known in advance; no counter-measures were taken; and only one test carried out at night ended in failure). Later, the decision was made to equip this system with a new interception stage (CE-2).

In 2015 the United States is intended to begin the deployment of 24 ground SM-3 interceptors in Romania, and in 2018 – the same number in Poland. However, due to the cancelling by the Obama Administration of SM-3 Block 2B program, the U.S. will deploy in Eastern Europe the SM-3 Block 1B interceptors, and SM-3 Block 2A interceptors – in 2018.

As to the land-based tactical and shorter-range interceptors Patriot PAC-3 и THAAD, their total number does not exceed 1000 units. Nevertheless, these systems cannot intercept the ICBMs and do not substantially affect the strategic military balance.

The Russian S-300, S-400 and S-500 and the U.S. Patriot PAC-3, THAAD, SM-3 Block 1A, 1B and 2A missile air-defense systems will not substantially affect the strategic military balance between Russia and the United States.

There are no prospects for signing a new ABM Treaty. However, due to the cancellation of the 4<sup>th</sup> Euro-BMD stage and abandoned plans to develop SM-3 Block 2B, the United States will have no more than 100 strategic interceptor missiles till the expiry of the START Treaty.

In order to ensure predictability of the situation, to begin with, Moscow and Washington could agree on establishing a BMD cooperation center. This center could carry out a set of transparency measures: to hold technical briefings on performance characteristics of the existing and future BMD systems, and to submit annual reports on BMD systems. Besides, it would be possible to conduct joint BMD exercises such as computer simulation, table-top exercises, joint training involving Russian and U.S. BMD systems in the exercises, gathering and exchanging data obtained from radars and early warning satellites as well as sending information to command and control centers of Russia and the U.S.

These arrangements could be recorded in an "Executive Agreement" (such a format was used together with the signing of the 1972 SALT Treaty).

Meanwhile an agreement with Iran will undermine the pretext for Aegis Ashore in Europe. That will be interpreted as U.S. intention to use BMD against Russian ICBMs.

### **High precision conventional weapons**

The new generation of non-nuclear long-range precision guided munitions can effectively target nuclear platforms and storage facilities.

The signing of any agreements with the U.S. on banning the high-precision conventional weapons seems quite unlikely. The deployment of those weapons, carried by drones, tactical aircraft and missiles near Russia will make Moscow even more suspicious on transparency proposals.

However, it could be proposed to the American side to limit the number of deployed long-range high-precision systems such as "Prompt Global Strike"; to annually exchange plans for deployment of these systems (with the designation of their location); to confidentially notify one another prior to the use of these systems against the third countries.

These arrangements can be recorded in the form of political declarations.

It would also be appropriate to begin multilateral negotiations on the new all-European conventional arms control regime instead of CFE. The precision strike assets could also be covered along with tanks, armored combat vehicles, artillery, combat aircraft and attack helicopters.

Moreover, it can be proposed to the U.S. to start consultations on the new confidence-building measures in the naval area. In particular, the issue could be raised on the need to provide information on prior notification of each other in case of the entry of surface ships or submarines in the water areas offshore the territory of the other party. This would allow us to reduce the threat for the strategic forces of Russia in the event of U.S. naval deployment of ships equipped with cruise missiles and SM-3 interceptors.

### **Cyber security**

In the area of cyber security it is deemed appropriate to discuss with the U.S. the possibility of inviting other countries to join the Russian-American agreement on countering the cyber threats. This June Vladimir Putin and Barack Obama reached an unprecedented understanding on

combating the cyber threats "to create a mechanism for information sharing in order to better protect critical information systems"<sup>15</sup>. This mechanism, when necessary, will engage the hotline that has been used by Moscow and Washington to prevent a nuclear conflict since 1963.

It would also be useful to establish a permanent bilateral or multilateral cyber security threat reduction center.

### **Space weapons**

At present, Russia and China are calling for elaboration of a treaty to ban the deployment of any weapons in outer space, and the European Union – for adopting a code of conduct in outer space. It seems appropriate to support the Code. Since the U.S. makes no haste to join the Code, this will put Washington in a complicated situation. It is necessary to bring our positions closer on the basis of a compromise: to adopt the Code of Conduct in Outer Space at the first stage (using the MTCR as a precedent) indicating that at the second stage (in the framework of the Conference on Disarmament in Geneva) talks will begin on drafting a treaty to ban deployment of any weapons in outer space.

Moreover, it could be proposed to the U.S. side to come up with a joint statement that Russia and the U.S. do not intend to deploy any attack systems in outer space and to propose other countries including China to join this commitment.

### **Preliminary Conclusions**

We have to admit that although there are no ideological conflicts between Moscow and Washington today comparable to the confrontation economic and political systems in the Cold War period, and although the *reset* has made it possible to achieve accords on START, WTO and several other issues, Russian-American relations remained fragile and unstable. The Ukrainian crises provoked a new confrontation between Russia and The United States. MAD represents one of the “built-in” elements destabilizing these relations.

An analysis of approaches taken by Russia and the United States to the problem of strategic stability indicates that no radical improvements should be expected here in the short-term. While not denying the necessity and possibility of new accords on military-strategic issues, we have to conclude that new agreements on arms reductions and limitations cannot in themselves lead Moscow and Washington to Mutually assured security instead of MAD. But the arms control regime needs to be preserved to prevent further deterioration of Russian-Western relations.

Russia and the United States share common interests in their approaches to a host of key issues in international security. This primarily concerns non-proliferation of weapons of mass destruction.

In our opinion, qualitative changes in the political and economic spheres will also render inevitable the transformation of military-strategic interaction between Russia and the United States. Furthermore, both political and legal international approaches to coordinating the two sides' positions are possible.

The military-to-military contacts which were cancelled because of the Ukraine crises should be immediately resumed and expanded.

Therefore, strategic stability in the 21<sup>st</sup> century could rest on the following pillars:

1. Treaty obligations on limitations and reductions in armaments.

2. Confidence-building and transparency measures on the basis of political obligations.
3. Unilateral parallel measures to demonstrate the absence of threat.
4. Cooperation in the area of security and defense on the basis of reciprocal political and legal commitments, including those related to BMD.
5. Development of political and economic cooperation between Russia and the United States.

**Session III: Technology Development**  
**James Fuller**

**MONITORING AND VERIFICATION FOR NUCLEAR WARHEAD  
ARMS CONTROL: TECHNOLOGY NEEDS**

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*Track II Dialogue: Next Steps Regarding Limits on Non-Strategic  
Nuclear Weapons*

**CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES**

**WASHINGTON, DC  
JUNE 4-5, 2015**

MONITORING AND VERIFICATION FOR NUCLEAR WARHEAD ARMS CONTROL: TECHNOLOGY NEEDS

**DIFFERENTIATING STRATEGIC FROM NON-STRATEGIC**

- A definition that includes unequivocal observables and/or measureable parameters will be needed for trustworthy verifications
- THE key issue from a verification technology perspective
  - In some cases there are some obvious visual differences: useable?
  - Measurements based on demonstrated (US-RF) attributes likely not enough: is there an additional key differentiating and measureable attribute that might work?
  - If high confidence is required, then type-differentiating template methods offer a demonstrated solution: quite intrusive however, and innocent null results difficult to deal with
- Based on joint US-RF and other studies regarding strategic warheads, there are other verification problems common to both categories are yet to be solved

### A CONDENSED HISTORY OF COOPERATIVE TECHNOLOGY STUDIES

- Development and fielding by the IAEA of monitoring devices and procedures for the NPT
- TTBT U.S.- Russia Joint Verification Experiment
- Development and fielding of INF neutron detection and SS-25 mobile launcher Cargo Scan
- START rocket motor unique identification (fool-proof tags and seals) investigations by the U.S.

### A CONDENSED HISTORY OF COOPERATIVE MONITORING PROGRESS, continued

- U.S. - Russia Lab-to-Lab and WSSX joint technical methods research
- U.K. – Norway dismantlement verification exercise
- P-5 Dialogue
- Numerous unilateral studies worldwide by government labs, academics, and NGO's

### SOME SIGNIFICANT ACCOMPLISHMENTS

- Reasonable understanding by U.S., Russian specialists of each others' sensitive and non-sensitive information categories
- Development and demonstration of *attribute measurement* technologies
  - Ground-breaking (US-RF) mutual demonstrations of measurements on sensitive items
- Good understanding by U.S. of the usefulness of *templates*
  - This information shared with Russian specialists
  - Some intriguing work in self-protecting physical templates
- General understanding of the need for *information barrier* procedures and technology for most verification technology involving warheads and nuclear components

### SOME RECENT SUGGESTIONS

- Expand multilateral technical engagements and R&D participation (NTI, 7/34)
- Demonstrate “authenticatable” information barrier system (NTI, 7/34)
- Initiate international technical assessment and effect of warhead containers (NTI, 7/14)
- Designate stand-alone verification facilities (NTI, 7/34)
- Strengthen independent peer review and vulnerability assessments for on-going research (NTI, 7/34)
- Launch joint study on applicability of IAEA technologies for warhead environments (NTI, 7/14)

### SOME RECENT SUGGESTIONS, continued

- Discuss warhead environments and safety and security requirements as part of P-5 dialogue on verification (NTI, 7/14)
- Revitalize research on non-nuclear warhead signatures
- Formerly investigate ways of making secure declarations, such as hash algorithms and zero-knowledge systems (Gerwin, 3/15; Jie and Glaser, 10/14)
- Develop standardized unclassified warhead test objects (Jie and Glaser, 10/14)

### FINAL THOUGHTS

- A useable and agreed-to technical definition of "non-strategic nuclear weapon" is needed
- Most of the problems related to NSNW monitoring and verification are common for any warhead treaty item regime...the need for type-differentiation a possible exception
- Preparation on a cooperative basis well in advance of any political arms control activity is preferred by technical specialists...it can take years to come up with effective and acceptable monitoring systems, especially if sensitive military items are to be involved
- Broader involvement by the non-nuclear weapons states and industry would bring new thinking and creativity to solving the tough problems...why not, if the best approach to verification and monitoring is to be a regime that must not reveal sensitive warhead design information?
- It's smart to take advantage of any hiatus in warhead reduction negotiations to solve the difficult monitoring problems...and helps demonstrate serious intent by the parties involved

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- **Jie and Glaser, 10/14.** *The Challenge of Nuclear Warhead Verification for Arms Control and Disarmament: A Review of Attribute and Template Systems*, Yan Jie and Alexander Glaser, Princeton University, proceedings of the 14<sup>th</sup> PIIC Beijing Seminar on International Security, Beijing, October 2014.

## Session V: A World Without Tactical Nuclear Weapons?

Nikolai Sokov

There is nothing “magical” about TNW. They are legacy weapons inherited from the previous era:

- Shorter-range delivery vehicles were the first to emerge – tactical (battlefield), theater, strategic. Simply a matter of progression of technology.
- Embodiment of the time when nuclear use on the battlefield was regarded as little more than particularly powerful artillery.

Doctrinal developments followed technology and perceptions of 1950s: doctrine did not drive weapons development; instead, weapons development drove doctrine. Hence, theoretically they can be disposed of if we decided to proceed from the doctrine. Impediments to elimination of TNW are political and psychological.

Nuclear weapons are increasingly unusable – most action takes place well below the threshold. The short-range variety is also dangerous as they can be vulnerable (and thus can trigger early use) and more difficult to control in wartime (and thus favor delegation at an early stage of conflict). In peacetime, however, these weapons are pretty much useless because, under the conditions of very high nuclear threshold, long-range assets (strategic and theater) are more than sufficient for whatever role nuclear deterrence continues to play.

In fact, it can be said that US has disposed of TNW considering that B-61s in Europe do not have a tangible military role and are intended for theater ranges. The status of TNW in Russia is also questionable: sea-launched TNW have intermediate ranges and the role of air-launched short-range assets is uncertain; ground-based TNW have apparently been eliminated. The role of TNW is uncertain, but it will probably move in a similar direction. TNW are still very much valid in “new” NWS – India and Pakistan. Eventually they might prove the biggest obstacle to global elimination of these weapons.

From the point of view of military roles and arms control process, we need to differentiate between three categories of the (excessively) broad category of TNW: short-range ground- and air-based weapons (the former do not exist in the United States and Russia), naval weapons, and intermediate-range (theater) weapons; some naval weapons have theater ranges, of course. The latter two categories appear to have some military utility (especially for Russia), so when we discuss the prospects of a TNW-free world, we are talking about the first category. The dangers and risks outlined above are also associated with short-range weapons. Below, the term TNW refers to these assets unless stated otherwise.

As we contemplate the prospect of *any* arms control measures to TNW – even those short of reduction and/or elimination – we must admit that nothing is feasible as long as the current chill (or, more properly, major crisis) in Russia-West relations continues, which will likely continue

for several years. There is little new in the current arms control impasse – it has existed for years (since early 2000s and New START has not succeeded in reversing it) As far as TNW are concerned, there exists a Pareto-optimal political configuration: some members of NATO insist that US TNW should remain in Europe and Russia uses that as a pretext to refuse putting its TNW on the negotiating table. Breaking out of this configuration would require a major concession from one or the other side, but the security situation has never been sufficiently dangerous to force either party to invest political capital in such a concession.

The continuing impasse should not prevent us from exploring possible options for way forward. As we do that, though, we should try to take into account the situation (military balance first of all) that could emerge several years from now instead of trying to fashion arms control initiatives proceeding from today's context.

*Looking into the future, one should be more concerned about NATO nuclear deterrence (or, more precisely, US tactical nuclear weapons in Europe) than about Russian tactical nuclear weapons: it appears possible that NATO will in five or so years, if not earlier, busy itself with the question whether it needs to enhance reliance on nuclear weapons, including first and foremost TNW.*

The East-West military balance in Europe consists of three interrelated components – TNW and theater-range nuclear weapons, modern conventional strike assets, and air/missile defense assets. TNW attract most attention (Russian theater-range assets, such as nuclear-capable medium bombers or SLCMs with capability against land targets are routinely disregarded) and are often seen as a balance to the other two. This is probably not true in strictly strategic terms; yet, perceptions are a material force that affects arms control interactions.

On the Russian side, the TNW posture will likely remain static and will perhaps continue to slowly shrink (like before, with the exception of the naval component, which is relatively independent of other categories of TNW). In contrast, Russia will continue to develop high-precision conventional strike weapons and air/missile defense capability. While, at first glance, this bodes well for TNW arms control, this is not necessarily true.

More than two decades ago the emergence of high precision conventional strike weapons reintroduced military power into international relations. Since the United States and the West in general have so far maintained a near-monopoly on these assets, they have not been subjected to arms control and have generally been regarded as a positive development to the extent that they represent an alternative to reliance on nuclear weapons. And, indeed, they have allowed deep reductions in nuclear weapons, including in the nuclear component of NATO deterrence in Europe (in fact, until recently complete withdrawal of US TNW remained feasible, if not likely). The role of modern conventional weapons as a substitute for nuclear deterrence can only remain positive until it is enjoyed by one side only.

The situation will change quite drastically when (hardly “if”) Russia obtains an operational modern conventional strike capability. It started to develop it in the early 2000s; the work noticeably accelerated after the 2008 war with Georgia, and although it is coming up slower than originally anticipated, progress has been very significant. That capability will without doubt be regarded by at least some members of NATO (especially those who insist on keeping at least some number of B-61s in Europe and who fear Russian traditional conventional capability) as a sign of increased threat because it is more usable and will give Russia a broader range of military and political options vis-à-vis NATO, especially if used in conjunction with and in support for what has recently been termed “hybrid warfare.”

As a result, debate about proper relative weight of nuclear, conventional, and defense components of NATO’s security strategy will likely be reignited. One cannot rule out that some members of the Alliance will request greater reliance on nuclear weapons to balance the newly obtained Russian modern conventional capability and will ask the United States to increase its “nuclear presence” in Europe and perhaps also deploy these weapons closer to Russian borders. Russia will obviously respond in kind. This will trigger a combined nuclear-conventional arms race.

In other words, today’s situation, although certainly not satisfactory, will likely become significantly less stable. The disagreements – perhaps even conflict – we see today over TNW will pale in comparison to a much more profound disagreement (or conflict) over modern conventional capability and its relationship to the remaining and perhaps somewhat growing nuclear capability.

Seen from that perspective, the current preoccupation with TNW can be conceptualized as an opportunity rather than a problem: these weapons can be leveraged to extend arms control measures to modern conventional weapons and thus prevent an arms race and general instability in Europe. The only condition that has to be met – and it is perhaps the most challenging condition – is for the United States and NATO to recognize that their monopoly on high precision conventional weapons will not hold forever.

The approach could work in stages. The first and probably the most important stage is to extend the Vienna Document to TNW, high-precision conventional strike weapons with theater ranges, and air/missile defense systems (starting with PAC-3 and S-300). Bringing them together under the same transparency umbrella is only logical – most delivery vehicles and platforms for high precision conventional weapons are dual capable, thus one cannot truly separate one from another.

Exchange of information should include locations (weapons storages for TNW) and information about their movement. Since these are high-impact assets, the definition of “significant” should probably entail rather small quantities. Naval non-strategic weapons should be part of the regime and include notifications about patrol areas of ships and submarines with precision-guided

weapons on board. In many ways, transparency with regard to these assets will be more relevant for security in Europe than the current scope of the Vienna Documents. The regime would still be limited to Europe – similar assets in Asian part of Russia or in the United States would not be subject to its provisions except when relocated to Europe whether permanently or temporarily. With regard to global strike capability, on which both the United States and Russia work, a transparency regime should be applied globally. That is, coverage should be primarily determined by the range of relevant assets.

The window of opportunity appears pretty narrow, however. It exists while Russia is still working on its modern conventional capability. Once that capability is fully operational (i.e., all elements are in place and are integrated within a single C3I system), Russia will likely lose interest in arms control measures for quite a long time.

Once a transparency regime is put in place, it will be possible to eventually agree on arms control/limitation measures with regard to high precision conventional and air/missile defense capability. This is when TNW could be safely eliminated altogether.

The same logic could apply to the Russia-China-India-Pakistan “chain.” Except, of course, it will be more difficult to negotiate because of the lack of experience in arms control and deep distrust among its members.

Eventually, one can imagine military balance and mutual deterrence based on a combination of long-range (strategic and theater) nuclear weapons subject to a variety of treaties and regulated high precision conventional and air/missile defense assets. This model would be consistent with the reduced role of nuclear weapons: these can still have a role in deterring a major conflict whereas a better regulated balance in non-nuclear capability will help reduce the likelihood of escalation.

The key condition is for the United States (Congress especially) to admit that monopoly on conventional strike and defense capability will not last. It is important to understand that inclusion of conventional and defense capability is not a concession to Russia but rather a means toward enhancing security when US monopoly will be lost. The task of convincing Congress, many in the government and in the expert community will be particularly difficult and probably cannot be met until it is too late.

## Vienna Workshop Summary

Vienna, October 6-7, 2014

On October 6 and 7, 2014, eighteen American, Russian and European experts met to discuss the political and technical issues surrounding potential limits on non-strategic nuclear weapons (NSNW). Although the conclusion of the New Strategic Arms Reduction Treaty (New START) agreement led to hopes -- on the U.S. side at least -- that reductions in these weapons were next, the crisis in Crimea and Ukraine more broadly has effectively doused any interest on either side in moving forward. Nonetheless, Track II discussions can provide an opportunity both for airing differences and discussing options for building confidence for the future.

During the two-day meeting, a few major themes emerged:

- Arms control might be easier in periods of trust, but during times of crisis, it can be a channel for easing tensions and establishing continuity of behavior when relations normalize. Transparency can help build predictability and confidence.
- That said, reductions of NSNW at this time are off the agenda: political issues with North Atlantic Treaty Organization (NATO) member states are too thorny and Russia believes a new round of reductions unaccompanied by constraints in other areas such as Ballistic Missile Defense (BMD) and conventional strategic arms would not serve its national interests.
- The Ukraine crisis is about European security, not about global security; no one should rush to the conclusion that the Cold War is back (for better or worse).
- Further progress in arms control measures on NSNW will require better verification mechanisms, particularly for verifying numbers and types of warheads, which is a very difficult task. Multilateral strategic arms control in the future will require talking about NSNW.
- Political confidence and trust is paramount; the U.S. Congress could potentially be a roadblock, suggesting that further reductions will require close consultation with key Members of Congress. On the Russian side, the focal point of behavior is the President, rather than the parliament.
- A key verification issue is how to address locations outside of declared sites. The technology has not quite developed yet to that point where that is possible.
- Confidence-building measures could initially include lab-to-lab cooperation, limited data exchanges, exchanges of military officers, and military doctrinal talks.
- Tangential opportunities for confidence-building could include broader discussions on European security and the use of other fora where U.S. and Russian leadership is needed (e.g., United Nations Security Council Resolution [UNSCR] 1540, Proliferation Security Initiative [PSI], and commercial opportunities [in space and nuclear energy]).

## **The Political Context**

Dr. Jeffrey McCausland and Gen. Evgeny Buzhinsky (Ret.) kicked off the discussion by drawing on points in their previously circulated discussion papers (see Appendix).

McCausland noted the divergence in U.S. and Russian approaches to NSNW: for Russia, NSNW is an issue of national security whereas for the United States, it is tied to collective NATO strategy. He doubted that the United States and Russia could find “a harmony of interest” on this topic but suggested that there might be some room for transparency-related measures.

McCausland proposed four steps forward for the United States and Russia:

1. Recognize that this is not a new Cold War and that the United States and Russia share common threats from global instability.
2. Resolve questions concerning the Intermediate-Range Nuclear Forces Treaty (INF).
3. Continue implementing New START.
4. End the crisis in Ukraine.

Dr. McCausland described the unilateral steps that the West had taken in response to the crisis in Crimea, including deployment of the NATO rapid response force, support for the B-61 nuclear bomb, deployment of F-35 aircraft to Europe and the life extension of the Tornado by Germany, resurrection of discussions for phased array Ballistic Missile Defense (BMD), and pressure to provide military assistance. These are contrary to Russian interests but are a consequence of Moscow’s recent actions. At the same time, McCausland suggested that participants recognize the value of the arms control process. Even during the worst days of the Cold War, the U.S. and USSR kept communications open, allowing for a baseline of progress once relations improved. McCausland suggested the following areas for potential cooperation:

- Military doctrinal discussions, given the changes during a decade of war;
- Implementation of UNSCR 1540 to seek greater efforts to reduce the possibility of existing weapons or fissile material falling into the hands of non-state actors. US and Russian cooperation and leadership in this effort is key;
- On-site security improvements (including joint threat assessments, safeguarding arsenals, joint recovery exercises, and nuclear accident/incident response);
- Seeking to improve/maintain arms control agreements such as the Vienna Document and Open Skies.

Gen. Buzhinsky disagreed with McCausland's description of Crimea, suggesting that the European Union and the United States had encouraged a coup which overthrew the legally elected government in Ukraine. He also noted that many of the unilateral steps described by Dr. McCausland were already underway before the crisis in Crimea. Buzhinsky suggested that Russia has made many more unilateral compromises on its national security interests in arms control agreements than the United States. In his view, only SALT I, SALT II and the Prague treaty paid equal attention to Russian national security interests. Further, he noted that when the

Soviet Union signed the Conventional Armed Forces in Europe (CFE) Treaty, the West was concerned about Russia's conventional superiority (10:1), but now NATO has the upper hand (3:1 superiority). He noted that the INF Treaty limited Russia's land-based missiles, which constituted its strength, but did not limit U.S. submarine-launched missiles.

Gen. Buzhinsky reiterated the Russian concern that BMD in Europe are aimed at defending against Russian strategic forces, rather than a handful of future Iranian missiles. An American participant suggested that if we all agreed that BMD could not defend against a massive nuclear strike, then it was clear that NATO's missile defenses were not erected against Russian nuclear forces. Gen. Buzhinsky stated that Russia perceives U.S. BMD not as a means to defend against a massive Russian attack, but as a defense against the few survived Russian strategic missiles launched in a retaliatory attack after an initial U.S.-NATO conventional disarming strike against Russian nuclear forces. He also noted that not all NATO members perceive the EPAA program as being directed against Iran.

Gen. Buzhinsky suggested that concern with agreements such as CFE, the Vienna Document and the Organization for Security and Cooperation in Europe (OSCE) is misguided. The CFE treaty was signed by blocs of countries that don't exist anymore. As for the Vienna Document, Russia does not conduct exercises with other countries anymore, so notifications are moot. A new CFE treaty might be possible, but it would need to cover 21st century armaments like drones, cruise missiles, and aircraft and such an agreement would be difficult to reach. Gen. Buzhinsky thought the "alleged violations" of the INF Treaty would blow over.

With regional nuclear weapon states on its borders (China, India, Pakistan, and North Korea) Russia can ill-afford to limit its NSNW, according to Buzhinsky. For Russia, NSNW constitute regional nuclear deterrence. However, Buzhinsky noted that if a miracle were to occur, confidence building measures (CBMs) related to NSNW could help restore US-Russian relations. The place to start would be mutual declarations of the total numbers of such weapons.

In general, participants agreed that transparency within arms control agreements could add to predictability and hence build confidence. One Russian participant suggested a 4-stage process that would include 1) an exchange of science data on the NSNW that were destroyed under the Presidential Nuclear Initiatives (PNIs), and numbers and locations of current NSNW; 2) consultations and unilateral initiatives without verification measures; 3) consultation on agreements with partial verification; and 4) a treaty.

An American participant acknowledged Russia's very different set of threats and the deterioration of its conventional weapons that have given NSNW a greater role in Russian military doctrine. In some respects, Russia is in a similar position to NATO in the early days of the Cold War. The U.S. and Russia need a broader strategic dialogue and a vision/framework in which to operate. This could be an appropriate use for Track II dialogues.

Another American participant acknowledged that Russia's challenges along its periphery are significant, but approaches for handling them can have unintended consequences. Would Russia prefer the risk of the United States introducing nuclear weapons? Or the risk of regional partners developing and deploying nuclear weapons? The United States and Russia share common

interests in reducing proliferation risks, terrorism risks and political turmoil. Reducing risks will require greater cooperation, shoring up alliances and helping provide missile defenses. These nuclear weapons require a global solution because geographical solutions to bigger problems are not helpful.

One participant suggested that the United States and Russia are at the end of traditional arms control, which is why several of the treaties are falling apart. A new framework needs to improve predictability and transparency. Ideally, this would allow for transitioning to long-range conventional capabilities, but would also include an intermediate-range capability for Russia. If the treaty-limited items are not delivery systems but stockpiles, should we really worry so much about numbers if there is sufficient transparency? Enhancing the predictability of the capabilities of ballistic missile defenses is a key part of this management strategy.

One U.S. participant doubted that the United States and Russia would have made much progress on NSNW reductions even without the ongoing crisis in Ukraine and Crimea, because of the array of underlying differences. Russia's actions in Crimea, however, have evaporated the U.S. willingness to undertake unilateral actions. Although Russia has stated it would like to pursue multilateral nuclear arms control, this cannot be done without U.S.-Russian bilateral cooperation.

Finally, NATO's position on NSNW has not changed on the surface, but attitudes have shifted from reducing reliance on nuclear weapons to increasing reliance on them. According to one European participant, the following actions will be important: 1) Reestablish informal mechanisms for crisis prevention; 2) Preserve what we have established via treaties, e.g., the Russia-NATO Council; 3) Try to move sideways, for example on doctrine, safety, security issues that are not directly related to strategic stability and which both sides should be able to support; and finally, 4) address the weapons themselves.

### **Lessons of Arms Control**

Dr. Ronald Lehman spoke on the lessons of earlier arms control in thinking about future limits on NSNW. Technically speaking, the United States and Russia have already done NSNW arms control, having concluded the INF Treaty. However, some of the assumptions about verifying the INF Treaty may have been wrong. Definitional issues (what is strategic versus non-strategic; what is adequate versus effective verification) and counting rules can change over time. The key objective is to reduce uncertainty. As the number of strategic weapons moves lower, there will be a greater need for precision regarding NSNW and this is a difficult challenge. The U.S. and Russia have skirted this issue for many years because it's hard technically and politically. The solution is not to settle for politically expedient (and thus dilute) verification, but to address the hard challenges.

### **The Verification Context**

Participants debated the difficulty of verifying NSNW. On the one hand, most acknowledged that verification would have to be far more intrusive than has been the case thus far. In the words of one participant, "It doesn't approach what has been done under strategic nuclear weapons treaties." On the other hand, verifying NSNW could be like verifying reserves of strategic warheads because they are separated from delivery systems. At declared sites,

verification is not that hard, but verification becomes much more difficult outside of declared sites.

One participant suggested that focusing on high standards of verification for NSNW would be contrary to NATO's earlier approach on this issue, which was to pick the "low-hanging fruit."

Ms. Nancy Jo Nicholas presented an overview of the contributions of science and technology to technical verification. She highlighted the major challenges: evaluating the material presented (measurement), protecting the host country's classified information (certification), allowing for independent confirmation and establishing a chain of custody. She noted that in previous arms control agreements, parties have not always agreed to limits that they could already verify (e.g., the Limited Test Ban Treaty) but that the time horizon for developing technologies is fairly long. That said, some tools being considered for NSNW verification focus on one element of the verification mission and exploit technologies developed for other programs. These may include non-destructive assay techniques for warhead measurements, information barriers and template matching for warhead verification, layered sensors and remote monitoring (e.g., muon radiography) for facility monitoring, crowd-sourcing for data assessment, quantum cryptography for data authentication, and portal monitoring, tags and seals for chain of custody. One participant suggested that these techniques focused on verifying declared items but that NSNW verification would also have to provide confidence in the absence of undeclared activities outside of declared sites.

Dr. Eugene Miasnikov presented his views on the two major current obstacles to NSNW reductions: the lack of interest by Russia and the development of precision-guided weapons. Miasnikov suggested that the West can now provide few incentives to Russia and that the arguments made by the West for reductions are unconvincing (e.g., arguments about the safety and security of non-deployed warheads). Instead, Russia has explicitly linked NSNW reductions to progress in other areas like BMD, space, and a European security architecture. Miasnikov suggested that NSNW CBMs could be a "sweetener" ("makeweight") for other deals that Russia wants. On precision-guided weapons, Miasnikov noted that their unrestricted development poses a fundamental problem, since these weapons are often perceived as a substitute for nuclear weapons. He noted that the deployment of modern conventional precision arms (both offensive and defensive) will make nuclear weapons unnecessary and therefore expendable, but will also be perceived as a new threat and will therefore reduce incentives for further nuclear cuts.

Russian participants questioned why the United States couldn't provide extended deterrence with its strategic weapons to NATO as it has done in other regions of the world. U.S. and European participants responded that nuclear weapons play an important burden-sharing role within NATO and noted the importance of U.S. nuclear consultations with allies, partly because of the consensus decision-making process in NATO. That said, some participants conjectured that if U.S. nuclear weapons were not already on NATO territory, few would be arguing to deploy or return them.

## **Break-out Groups**

Participants split up into three smaller groups to discuss how they would approach political confidence-building measures, technical confidence-building measures, and tangential opportunities (unrelated to NSNW) to build confidence between the United States and Russia.

### Political CBMS

Some of the feasible options to improve political confidence discussed by this group included:

1. Data exchange historical from PNI (numbers, types, etc. Not %)
2. Data on current NSNW stockpile (number, types, including those awaiting dismantlement, active, and not deployed)
3. Increased exchange of military officers/visits
4. Better cooperation on UNSCR 1540
5. Reinvalidate Open Skies as a policy tool and Vienna Document for 21<sup>st</sup> century
6. Military doctrine talks
7. Political pledge for no increase in NSNF
9. Improved transparency (but no specific ideas)
10. Retain portions of the bilateral presidential commission

They agreed that there were certain CBMs that would not be possible, including reaffirming what have become known as the “Three Nos” (that NATO members have no intention, no plan and no reason to deploy nuclear weapons on the territory of new members), reaffirming the Presidential Nuclear Initiatives, pledging not to modernize capabilities, considering geographic constraints as a solution and discussions about reducing NSNW.

### Technical CBMs

This group explored unilateral, bilateral and multilateral technical CBMs. They concluded that multilateral measures were the toughest (e.g. P-5 transparency talks) but that measures involving a third party (e.g., Norway or the IAEA) hold the possibility for deflecting criticism. Bilateral CBMs were considered problematic for the moment. Unilateral measures were possible (e.g., warhead measurement campaigns) but were unlikely to be focused enough to bring real confidence with regard to verifying NSNW reductions. The group assumed that the current political climate would make specific technical CBMs difficult, but that softening the focus (away from NSNW-specific, verification-specific, U.S.-Russian specific) could help.

Ideas for near-term implementation included public, bilateral exchange of data on all nuclear weapons (strategic, NSNW, deployed, reserve, awaiting destruction), visits to former storage sites in Europe, experts’ visit to prepare for verification, and an international commission on verification of fissile material/reinvigorating the Trilateral Initiative.

Ideas for long-term implementation, which focused on technology development, included focusing on cross cutting technologies that serve more than one purpose (e.g., information transmission security; data storage; information barriers; storage security), softening the focus away from verification (e.g. military doctrine talks, not just on nuclear [with military staff to keep it technically focused]), involving a third party, and seeking to characterize efforts as contributing to other purposes – e.g. nuclear security, Pu management. The group agreed that any technical CBMs would have to be articulated carefully in order to find a theme that works

for both: in United States, “nuclear security” is popular; in Russia, cooperative threat reduction is anathema.

### Tangential opportunities

This group concluded that the United States and Russia need to engage in a broader discussion about European security and European security architecture. This cannot now be conducted among governments, given the current political environment, but Track II efforts could be the appropriate vehicle to engage on these topics and provide a basis for discussion when formal government to government talks resume. This group agreed that Russia had often been excluded from discussions (e.g., missile defense) and that there has to be some understanding that Moscow will be included in the future.

Track I efforts must focus on crisis prevention, while Track II could focus on ideas for addressing limits on conventional military technology and capacity. A primary objective today should be to create stability thereby enhancing international peace and security.

## **Russia, NATO, Arms Control, and Non-Strategic Nuclear Forces<sup>40</sup>**

**By Jeffrey D. McCausland**

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### **Introduction**

All 21st century policymakers would agree that any nation's strategy must focus on national interests and be built on three variables. First, what are the "ends" of strategy or the goals the nation is trying to accomplish alone or in concert with friends and allies? Second, what are the "ways" or policies that are formulated in order to move the nation in the direction of a better future? And finally, what are the "means" or resources available to the government of any nation that can be devoted to securing these objectives, and how can they be husbanded in a fashion to maximize their potential?

The United States and the Russian Federation have been involved in numerous arms control negotiations with the goal of furthering their respective national interests. Such discussions and the subsequent agreements are the "ways" of policy. Following the signing of the New START treaty both Moscow and Washington indicated that the next area of armament to be considered for potential reductions might be so-called non-strategic nuclear forces (NSNF). These forces include short-range missiles (below the limits imposed by the INF Treaty) and bombs designed to be delivered by tactical aircraft.

This paper will examine the political context for discussions on limitations with respect to NSNF and related areas for potential cooperation between the United States and Russian Federation. Clearly, relations between US (as well as its NATO partners) and Russia have deteriorated over the past year, and this makes any progress on this issue difficult. Consequently, the obstacles to initiating talks and prospects for success will be considered as well as making policy recommendations.

### **Factors affecting future efforts**

Since the beginning of 2014 events such as the Russian annexation of Crimea, the apparent shooting down of a Malayan Airliner by so-called Ukrainian dissidents equipped with weapons supplied by the Russian Federation, and Moscow's continued violations of Ukrainian sovereignty have all placed a chill on relations between Moscow and the West.

Discussions concerning NSNF were already complicated by a number of factors prior to the onset of the Ukraine crisis. The failure to bring into effect the Adapted Treaty on Conventional Armed Forces in Europe (ACFE) and Moscow's suspension of participation in the existing treaty underscored the connection between conventional and nuclear forces. It also caused many in the West to question whether Russia's current leadership considered arms control a useful policy tool.

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<sup>40</sup> This is a draft publication that was prepared for a workshop sponsored by the Center for Strategic and International Studies (CSIS) at the Vienna Center for Disarmament and Non-Proliferation (VCDNP) in Vienna, Austria from 6-7 October, 2014. It is not to be cited or reproduced without the express permission of the author.

Furthermore, Western policymakers had also become increasingly concerned about possible Russian violations of the Intermediate Range Nuclear Forces (INF) Treaty.<sup>41</sup> This agreement was signed in 1988 prohibiting the production or testing of surface-to-surface or cruise missiles with a range of 500 to 5500 kilometers. Charges have circulated for nearly two years that Russia has been testing an intermediate range cruise missile (referred to as the R-500), which would be a violation of treaty provisions. The State Department's *Annual Arms Control Compliance Report* to Congress released this summer reported Russia to be in violation of the treaty. As a result, both Russian and Western security experts have argued that the current climate is reminiscent of the worst days of the Cold War.

The West has responded to Moscow's aggression in Ukraine with an array of economic sanctions. Furthermore, it seems extremely likely that the following additional measures will take or at least be considered. All may serve to further complicate any possibility of serious discussions on NSNF, and Russian responses are likely:

- NATO will develop and begin the deployment of a Rapid Response Force to Eastern European members to provide a "persistent" presence.
- The United States will continue the development and eventual deployment of a new B61 bomb to replace its existing NSNF arsenal in Europe.
- Alliance members will maintain if not accelerate their purchase of the F35 aircraft from the United States to include a version designed for tactical nuclear delivery. Germany will continue a life extension program for its existing Tornado aircraft that will allow them to be used for the delivery of the B61 thru 2030.
- Defense policymakers in Europe and the United States are likely to resurrect discussions concerning the development and deployment of a phased array anti-ballistic missile defense shield for NATO members.
- If the crisis in the Ukraine persists there will be growing pressure on Western leaders to provide direct military assistance to the Kiev government.

### **Is there a way forward?**

Despite the current challenges, it is important to recall that the West conducted discussions with the Soviet Union at some of the worst moments during the Cold War such as in the aftermath of the invasion of Czechoslovakia or the quelling of the Solidarity movement in Poland. Furthermore, this is *not* the Cold War. Moscow has clearly violated international norms and challenged the very fundamentals of the international system. While the seriousness of the current situation cannot be ignored, Russia does not appear to be motivated by a global, expansionist ideology as the Soviet Union maintained for over forty years. Both the United States and Russia do not maintain their strategic nuclear forces on "hair trigger" alert, and the US has dramatically reduced not only its tactical nuclear forces from Europe but also its conventional forces. Furthermore, Washington and Moscow have common interests that

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<sup>41</sup> Roberta Rampton, "US Says Russia Violated Nuclear Treaty", *Reuters*, 28 July 2014. See also Stephen Pifer, "What Should Obama do About Russia and the INF Treaty?" *Los Angeles Times*, 30 July 2014. Available at: <http://www.latimes.com/opinion/op-ed/la-oe-pifer-russia-missile-test-20140731-story.html>

encourage cooperation. Examples include the elimination of the Syrian chemical arsenal, the threat posed by global terrorism, and growing instability in East as well as South Asia.

However an agreement focused on actual NSNF reductions would appear unlikely at least in the near term. Still there remain a range of actions that must be taken to insure relations do not deteriorate further. In addition, there are potential restraints directly related to NSNF as well as other efforts to enhance transparency or predictability that could be useful. Discussions in these areas should be pursued. Incremental success in them may assist in developing momentum and helping to reestablish trust that has been damaged by events over the past year. They could include the following:

- *Resolve the issues concerning alleged Russian violations of the INF Treaty.* It is in the interest of both Russia and the United States to move as quickly as possible to resolve the questions concerning the R-500 cruise missile. The Special Verification Commission established by the INF Treaty should be convened to address this issue.
- *Continued implementation by both sides of New START.* It is critically important that both sides continue their strict adherence to the provisions of this agreement. This is not only fundamental to any chance for improved relations but also remains in the best interests of both nations.
- *Initiate military doctrinal talks.* Such talks are a formal exchange of views by military officers and experts to enhance both understanding and transparency. They do not seek to negotiate an agreement. They should be focused on the size of the respective NSNF stockpiles for both nations and how they fit into the overall framework of each country's national security strategy and emerging military doctrines. Such talks have been conducted four times in the past. The most recent was held in The Hague in June 2013. Still these discussions have been only on an ad hoc basis, and some experts have argued that they lacked continuity.<sup>42</sup> Regular sessions could be established using the framework of the NATO-Russia Council.
- *Commence discussions on further implementation of UN Security Council Resolution 1540.* The United States and Russian Federation were sponsors for this resolution that was agreed upon in 2004. All states have three primary obligations under UNSCR 1540 relating to nuclear weapons and material: (1) prohibit support to non-State actors seeking such items; (2) adopt and enforce effective laws prohibiting the proliferation of such items to non-State actors, and prohibiting assisting or financing such proliferation; and to take and enforce effective measures to control these items, in order to prevent their proliferation, as well as to control the provision of funds and services that contribute to proliferation.

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<sup>42</sup> Jacek Durkalec and Andrei Zagorski, "PISM-IMEMO Workshop Report: Options for Transparency and Confidence-Building Measures Related to Non-Strategic Nuclear Weapons in Europe" (Warsaw: The Polish Institute of International Affairs, July 2014), p. 19.

Continued implementation of these actions will significantly strengthen the international standards relating to the export of sensitive items and support for proliferators (including financing) and ensure that non-state actors, including terrorist and black-market networks, do not gain access to chemical, nuclear or biological weapons, their means of delivery or related materials. Obviously, this is a goal shared by both nations that has only been underscored over the past few months with the emergence of ISIL as a major threat to international peace and security. The relative size of most non-strategic nuclear warheads, their number, and site dispersal make their vulnerability a point of concern. American and Russian leadership in this area continues to be critical in the continued fulfillment of the goals established in this resolution.

- *Conduct further discussions on site security improvements.* The United States and Russia, drawing in part on their Cooperative Threat Reduction experiences and working through the NATO-Russia Council, should exchange ideas on how to further improve security for nuclear storage sites. This could include some or all of the following: (1) conduct a joint threat assessment of the risk of terrorists or other nonstate actors penetrating a storage site and gaining access to nuclear weapons; (2) joint security assessment of how site security might be improved to guard against such risks to include improved. Both sides should present current techniques, technologies and procedures for storage, intrusion detection alarms, exterior site security, and better methods for enhanced personnel reliability; and (3) a recovery exercise in which U.S./NATO and Russian forces might work together to recover stolen nuclear weapons or fissile material. The United States and Russia could also discuss standards for use-control features on nonstrategic nuclear warheads. This could also include expanded joint nuclear accident/incident response tabletop and "live" exercises.<sup>43</sup>
- *Offer Russian and US assistance to other areas potentially threatened by nuclear instability.* The United States and Russia have the longest bilateral history of arms control discussions in history. Consequently, we share the greatest experience in determining how arms control fits in the continued development of our national security strategy as well as the best overall understanding of the connection between conventional and nuclear forces. This arms control history coupled with our roles as the two largest nuclear powers on the planet imply a global leadership responsibility. Leaders in both Moscow and Washington must acknowledge that decisions they make with respect to their NSNF stockpiles reverberate across the international community and affect other nations' security concerns.

The world is witnessing increased instability in two areas – the Korean peninsula and South Asia. In both places large conventional armed forces confront each other over heavily fortified borders. Both sides either possess nuclear weapons, a nuclear patron, or the ability to develop weapons. Bilaterally or through the NATO-Russian Council they should offer their expertise and assistance in promoting arms control discussions and improved nuclear security. The goal would be to assist the countries

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<sup>43</sup> Durkalec and Zagorski, pp. 21-22.

involved to lower tensions and improve crisis management while reducing the possibility of a nuclear weapon falling into the hands of a terrorist organization.

- *Seek to improve and maintain existing arms control agreements such as the Vienna Document and Open Skies.* As previously mentioned, there is a close relationship between conventional force imbalances and the development of NSNF's. It is extremely unlikely, however, that NATO and Russia will resolve their differences concerning the Adapted CFE Treaty that would allow it to enter into force and Russia resume compliance. Still improvements may be feasible for the Vienna Document and Open Skies that over time may establish conditions for resolving these differences and make reductions in non-strategic nuclear forces feasible.

## **Conclusions**

Both Washington and Moscow (as the largest nuclear powers) have unique responsibilities as well as an opportunity to provide leadership. Relations have clearly deteriorated dangerously, and the level of mistrust cannot be underestimated. Still Russia and the US have not yet returned to the depths of the Cold War, and the causes for renewed tensions are significantly different. Furthermore, the nature of emerging threats may still make cooperation feasible while also being consistent with each nation's respective national interests.

But these efforts do *not* occur in isolation or in a policy vacuum. Though the focus of any negotiation may well be the details of a prospective agreement, the process must always be consistent with the direction of national or alliance security strategy. For the United States this implies that any discussions concerning NSNF must be made with due consideration to the impact upon NATO. Security experts in Moscow must understand that the recent aggression against Ukraine has raised real concerns about the sovereignty and security of those NATO countries that share borders with the Russian Federation.

In addition, domestic events, other issues between states, the bureaucratic process of the participating parties, and the state of existing agreements have a direct bearing on the feasibility of any negotiations as well as the prospects for success. Over the past year some American policymakers have begun to question whether a "harmony of interests" still can be found between the US and Russia with respect to European security. Others have argued that Moscow is no longer a reliable negotiating partner. As a result, three things are critical if we are going to halt the further deterioration of relations and set the stage for cooperation, even in the areas described in this paper: (1) an end to the crisis between Russia and Ukraine; (2) resolution of alleged Russian violations of the INF Treaty; and (3) continued full implementation of the New START agreement.

Finally, many noted historians have argued that the immediate cause of World War I was the decision by European leaders to begin mobilizing their armies. This caused a chain reaction as potential adversaries reacted to avoid being vulnerable to attack. It is impossible to calculate whether arms control negotiations or discussions over common interests might have provided sufficient restraints during those tense moments in the autumn of 1914 and precluded conflict. But all nations should acknowledge that arms control is a tool of policy and *not* altruism, and that

cooperation is in service of finding an appropriate security balance consistent with national interests and within a continually changing security environment.

## The Russian Political and Security Context for Limits on Non-Strategic Nuclear Weapons<sup>1</sup>

By Evgeny Buzhinsky  
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Discussions on non-strategic (tactical) nuclear weapons (NSNW) have been very active for the last four years. Experts at various conferences and seminars have been trying to formulate a possible compromise for involving this class of nuclear weapons into arms control consultations (or better – negotiations). Of course, the main object of the above mentioned discussions is the Russian arsenal of NSNW. Just nine months ago there was a possibility that some kind of compromise may be found and Russian position on NSNW, at least as regards some transparency and confidence building measures (CBMs), may change in the nearest future. The change might've happened not because of the alleged “disparity of the western non-strategic nuclear arsenals with the greater Russian stockpiles of short-range nuclear weapons” or “disparity between the NSNW stockpiles of the Russian Federation and the United States” which is true if only NSNW are counted.

*Taking into consideration the difference in perceptions on the use of nuclear weapons between Russia and the U.S. It is more fair to assess the entire nuclear potentials of these countries (Russia has approximately 4300 strategic and non-strategic warheads, both operationally deployed and in storage, the U.S. – approximately 4760 ones).*

The change in Russian position might've happened because of Moscow's long-standing policy of keeping nuclear non-proliferation agenda “on the table” especially in view of the coming NPT Review Conference next year and an unwillingness to go further down on strategic offensive weapons' numbers. Unfortunately as a consequence of the current crisis in the relationship between Russia and the United States there seems to be little chance for the resumption of bilateral talks on the next round of nuclear force reductions in the nearest future. Taken into account the fact that NATO has decided to suspend all practical cooperation with Russia, any hopes of the Alliance reaching out to Moscow to discuss transparency and confidence-building measures (let alone reductions) for NSNW arsenals any time soon are also unrealistic.

*Although no official data on Russian stockpiles of tactical nuclear weapons was ever published, Russia is believed to have in its disposal an estimated 2000 deliverable non-strategic nuclear warheads. These include cruise missiles of various ranges, gravity bombs, torpedoes and depth charges. Since mid-90-s all of Russia's non-strategic weapons are in central storage (in the sites operated by the 12<sup>th</sup> Main Directorate of MOD) and are not deployed with delivery vehicles.*

The political crisis that erupted in Ukraine in early 2014 has ended the period in Russian-Western relations that began with the fall of the Berlin Wall in 1989. The crisis marks the end of a generally cooperative phase in those relations, which even included a failed effort of Russia's

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integration with or into the West on its own terms. Instead, the Ukraine crisis has opened a new period of heightened rivalry, even confrontation, between former Cold War adversaries. It has a traditional military dimension too, but this aspect is not, as yet, dominant.

To better understand why the Russian leadership has been consistently unwilling to start any arms control discussion on NSNW for many years, it is necessary to define the place of this class of weapons in the Russian military strategy. And definition is – critical.

Under present circumstances NSNW are practically the only means of securing Russia's independence and territorial integrity. According to Russian military strategy nuclear forces have two types of missions: traditional strategic deterrence, which relies primarily on strategic weapons, and limited use in response to a large-scale conventional attack. Both missions are reflected in the Military Doctrine of the Russian Federation which says that nuclear weapons may be used: 1) “as a response to the use of nuclear weapons or other weapons of mass destruction against the Russian Federation and/or its allies”; 2) “as a response to a large scale conventional aggression in the situations critical to the national security of the Russian Federation”.

The main reason for Russia's need for longer-range non-strategic nuclear weapons stems from the fact that long-range precision-guided conventional weapons provide a key advantage for the United States and NATO. To counter this Russia works hard to acquire similar long-range conventional strike assets and in the meantime relies on limited nuclear use, employing nuclear weapons of comparable ranges. The Russian Navy, which due to its modern size cannot yet compete conventionally with the navies of the world major naval powers, attaches particular importance to non-strategic nuclear weapons, because of the experience of all the latest military conflicts in which the main strikes were delivered by cruise missiles from surface ships and submarines as well as naval aviation.

Russian and US/NATO rationales for maintaining non-strategic nuclear weapons differ.

US/NATO sees their value largely in political terms: that is, providing a security link between the United States and Europe and serving as an element of NATO's nuclear capability. Many military experts agree that the U.S. tactical nuclear weapons (B61 nuclear bombs now stored in several European countries) have very little concrete value as a real deterrent in today's or tomorrow's Euro-Atlantic security space, in particular when the strategic forces of the United States, Great Britain and France remain visible and credible in any NATO context. The latest deployment by the U.S. in June this year of three B-52H and two B-2 strategic bombers to Europe demonstrated its readiness to use strategic bombers to reinforce regional deterrence and if there is a need to replace by them Dual Capable aircraft in regional contingencies.

Russia attaches more military significance to its non-strategic nuclear weapons. It sees those weapons as offsetting a conventional force disadvantage vis-à-vis its neighbors, serving as a force enhancer should conventional defense fail, and offering possibilities to escalate or to control escalation. Moreover Russia considers its tactical nuclear weapons as a counterbalance to the nuclear forces of third countries, nuclear capabilities of practically all of which are able to reach the territory of Russia. Reduction of Russian strategic nuclear potential in accordance with

the bi-lateral treaties with the USA relatively increases the role of Russian tactical nuclear weapons for the purpose of containment of the nuclear countries of Eurasia. So NSNW in Russia are considered to be the main means of regional deterrence.

As it was mentioned above, today and in the nearest future it is highly unrealistic to speak about continuation of productive dialogue between Russia and the USA/NATO on any arms control subject including missile defense, conventional forces in Europe, weaponisation of space and non-strategic nuclear weapons. Moreover, any limitations and reductions of Russian stockpiles of NSNW will be unrealistic to expect even if the current crisis is settled down and the West-Russian relations are back to a more or less normal status again.

Nevertheless, sooner or later the armed conflict in Ukraine will be over and political settlement will be reached. Then the issue of normalizing relations between Russia and the USA/NATO will again become relevant, although I suspect they will not return to the “business as usual” level for a relatively long time.

Even during the best periods in the relations between Russia and the West after the end of the Cold War there was obvious lack of mutual trust. That lack of trust was especially evident in arms control sphere (missile defense, conventional forces, NSNW). Today the level of mutual trust is at its lowest point. But even during the Cold War times, the arms control agenda was one of the few areas of mutual interest where the Soviet Union and the United States managed to reach mutually beneficial compromises.

And how strange it may sound that one of the ways to start restoring that trust may be the beginning of consultations on transparency and confidence-building measures (CBMs) with regards to NSNW, the most difficult and at the same time the most worrisome item of the arms control agenda.

There are a number of such possible CBMs intended to create transparency and build (restore) trust between Russia and the USA that could be agreed upon.

***Greater Transparency.*** Russia and the United States both have a good idea of the locations where the other stores its nuclear warheads but less solid information on numbers. As one significant step, Russia and the United States might agree to disclose the total number of their non-strategic nuclear warheads in storage and the number of warheads in the dismantlement queue.

***“Demating” Warheads from Delivery Systems.*** Russia has demated nuclear warheads from other non-strategic delivery systems. The sides might consider as a CBM formal statements affirming that nuclear warheads have been demated from their non-strategic delivery systems, and as a matter of policy, there is no intention of placing non-strategic nuclear warheads on delivery systems in the future.

***Security of Nuclear Warheads.*** Russia and the United States could conduct a joint threat assessment of the risk of terrorists penetrating a storage site and gaining access to nuclear weapons; a joint security assessment of how site security might be improved to guard

against such risks; and resume practice of conducting recovery exercises in which Russia and the U.S./NATO forces work together to recover stolen nuclear weapons or fissile material.

***No Increase Commitment.*** As a minimal step, Russia and the United States might consider announcing that each will not increase the number of its non-strategic nuclear warheads.

NATO's Strategic Concept pledged to seek the relocation of Russian nuclear weapons away from NATO territory as one of the possible CBMs. I am sure that such a move on the part of Russia is practically not possible since it's too costly and may reduce operational capabilities of the Russian Armed Forces, especially of the Russian Northern Fleet.

Confidence-building measures on non-strategic nuclear weapons by themselves could build trust and momentum for broader progress on a much wider range of political and security issues.

There is one sensitive moment in the context of a possible U.S.-Russian agreement on CBMs on NSNW which was very important for Russia before and is even more important against a background of the present level of NATO-Russia relations. Transparency on this issue is very important to some European states. All the informal discussions concerning the question of transparency on non-strategic nuclear weapons show that United States is going to share information on Russian tactical nuclear weapons with its NATO allies. Such an approach is contrary to Russian official position based on reciprocity. So in the context of CBMs Russia will definitely insist on the involvement of France and the United Kingdom into the process or even NATO's nuclear potential as a whole.

# **Verification and Confidence Building Measures Related to Non-Strategic Nuclear Weapons in Europe: Obstacles on the Way Forward<sup>1</sup>**

**By Eugene Miasnikov**

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The existing crisis in relations between Russia and the West has effectively postponed a chance of constructive discussion on verification and confidence-building measures (CBMs) of non-strategic nuclear weapons (NSNWs) for an indefinite future. Unfortunately, Russia and the West continue to blame each other, as the situation in Ukraine deteriorates further, and there are not enough signs of de-escalation of the conflict. Nevertheless, it is important to understand what obstacles have to be surmounted in order to move the dialogue on NSNWs from the “dead stop”, provided that the sides resolve the Ukrainian crisis, and relations between Russia and the West hopefully return to a non-confrontational pass again. This paper makes an attempt to analyze the existing state of affairs and identify key problems to be resolved.

## **Historical background**

Verification and confidence building measures with regard to non-strategic nuclear weapons (NSNWs) already have a rich and - to some extent – a successful history of implementation in the Euro-Atlantic region.<sup>2</sup> The 1987 INF Treaty eliminated all ground-launched missiles having ranges between 500 and 5000 kilometers. According to the treaty, the missile front sections including the warheads without nuclear explosive charges have been destroyed at designated sites. In the late 1980-s the Soviet Union unilaterally withdrew all its non-strategic nuclear weapons from territories of the Warsaw Pact countries, and by early 1990-s – from the former Soviet republics. Though the primary reasons were changes in the Soviet military thinking as well as nuclear weapons safety and security concerns, these actions can be regarded also as confidence building measures. Reciprocally in the late 1980s, the United States cancelled or scaled back all planned modernization programs and sped up withdrawal of NSNWs from operational status.

On September 27, 1991, U.S. President George H. W. Bush announced that the United States would withdraw all land-based tactical nuclear weapons from overseas bases and all sea-based tactical nuclear weapons from U.S. surface ships, submarines, and naval aircraft. A week later on October 5, 1991, President Gorbachev replied that the Soviet Union, too, would withdraw and eliminate non-strategic nuclear weapons. On January 29, 1992 as the Soviet Union collapsed, the Gorbachev’s pledge was confirmed by the Russian President Yeltsin. Though the Presidential

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<sup>1</sup> This is a draft publication that was prepared for a workshop sponsored by the Center for Strategic and International Studies (CSIS) at the Vienna Center for Disarmament and Non-Proliferation (VCDNP) in Vienna, Austria from 6-7 October, 2014. It is not to be cited or reproduced without the express permission of the author.

<sup>2</sup> For the purpose of this article the term “confidence building measure” (CBM) is defined as “collective or unilateral action in the military field by states to reduce tension and military confrontation, and also to prevent armed conflicts resulting from an incorrect assessment of each other’s military activities” (NATO-Russia Council Consolidated Glossary of Cooperation, Brussels-Moscow, 2011). The “non-strategic nuclear weapons” (NSNWs) are defined as U.S. and Russian nuclear warheads not associated with delivery systems that covered by the New START agreement. The term also includes dual-capable delivery systems, which these warheads are referred to.

nuclear initiatives did not assume any verification measures, there is a general understanding that most of proposed initiatives were successfully implemented.<sup>3</sup> Russia, in particular, recently stated once more, that its stockpile of NSNWs has been reduced by 75% over the period of two decades.<sup>4</sup> According to estimates of independent experts, the United States reduced more than 90% of its inventory since 1991.<sup>5</sup>

By the mid 1990s it became clear, that in order to cover non-strategic nuclear weapons by arms control agreements, there is a need to develop verification procedures for non-deployed warheads kept at storage places. Such a task was conducted in particular by a joint U.S.-Russian Working group, created as a result of the U.S. and Russia Presidential Summit decision in January 1994 to “*consider... steps to ensure the transparency and irreversibility of reducing nuclear weapons.*”<sup>6</sup> Though the primary goal of the joint cooperation was dealing with strategic nuclear warheads slated for elimination, the results of the work had important implications for development of verification techniques to control NSNWs. Unfortunately, despite the progress achieved, the work had been stopped by the fall of 1995 because of the lack of interest on the Russian side.

The subject re-surfaced later again in the agreement concluded during the Helsinki U.S.-Russia Presidential Summit of March 21, 1997. The two sides agreed that the number of basic elements of a future START III agreement should include “*measures relating to the transparency of strategic nuclear warhead inventories and the destruction of strategic nuclear warheads and any other jointly agreed technical and organizational measures to promote the irreversibility of deep reduction ...*”. The Presidents proposed that in the context of START III negotiations their experts will explore, as separate issues, possible measures related to “*... tactical nuclear systems, to include confidence-building and transparency measures.*”

Although both sides agreed with the transparency regime’s objectives and implementation mechanisms, they had differing approaches to defining its scope.<sup>7</sup> This divergence in approach, as well as the negative impact caused by NATO expansion, Kosovo war and the debate in the U.S. over the expediency of keeping the ABM Treaty, prompted the Russian side to leave the talks on these issues in 1999.

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<sup>3</sup> There are still some doubts among analysts, that Russia fulfilled its pledge to eliminate its ground-launched nuclear warheads (Hans Kristensen and Robert Norris, “Russian Nuclear Forces,” 2014, *Bulletin of the Atomic Scientists*, 2014, March -April, Vol. 70(2) pp. 75–85).

<sup>4</sup> Interview of Mikhail Uliyanov, the Director of the Department for Security and Disarmament (currently, the Department for Non-Proliferation and Arms Control) of the Russian Ministry of Foreign Affairs, to *Interfax* Information Agency, January 31, 2014

<sup>5</sup> Hans Kristensen and Robert Norris, “Non-Strategic Nuclear Weapons”, 2012, *Bulletin of the Atomic Scientists*, 2014, March -April, Vol. 68(5) pp. 96–104

<sup>6</sup> Joint Statement by the President of the Russian Federation and the President of the United States of America on the Non-Proliferation of Weapons of Mass Destruction and the Means of Their Delivery (Moscow, January 14, 1994)

<sup>7</sup> An excellent summary of US and Russian cooperation on developing transparency regime for nuclear warheads can be found in: Anatoly Diakov, “Nuclear Warheads and Weapon Grade Materials”, In “Nuclear Reset: Arms Reduction and Nonproliferation”, Ed. by Alexei Arbatov and Vladimir Dvorkin, English version ed. by Natalia Bubnova, Carnegie Moscow Center, 2012, pp 233-256.

During the years of President George W. Bush administration, the discussion on NSNWs as well as on strategic arms was deadlocked, but the issue was revived again in the late 2000s. In particular, the U.S. side made an attempt to include it into the agenda of the New START negotiations. This attempt failed, but the Senate, in its Resolution of ratification on New START, stated that the United States should seek to initiate within one year, “*negotiations with the Russian Federation on an agreement to address the disparity between the non-strategic (tactical) nuclear weapons stockpiles of the Russian Federation and of the United States and to secure and reduce tactical nuclear weapons in a verifiable manner.*”<sup>8</sup> In this connection the Obama administration made vigorous attempts to draw Russia into a dialogue on NSNWs. In parallel, NATO made efforts to encourage Russia to discuss transparency and confidence-building measures regarding NSNWs in Europe within the NATO-Russia Council.<sup>9</sup>

Russia did not meet the offers from their western counterparts with great enthusiasm. Statements and interviews of the Russian Foreign Ministry officials every time stressed the attitude that remains unchanged for more than a decade: prior to beginning any substantive negotiations on NSNWs, all states should withdraw their nuclear weapons back to their national territory and irreversibly eliminate an option to deploy them abroad again rapidly (which means eliminating related infrastructure in Europe).<sup>10</sup> Though some NATO members lobbied for withdrawal of U.S. nuclear bombs from Europe, the 2012 NATO Summit in Chicago stated that “*...NATO is prepared to consider further reducing its requirement for non-strategic nuclear weapons assigned to the Alliance in the context of reciprocal steps by Russia...*”<sup>11</sup>

By the end of 2013 the discussion on NSNWs had been dead-locked. Russia did not reveal any interest to President Obama’s proposals made in Berlin in June, 2013 to reduce nuclear arsenals by one-third below the New START levels. Reportedly, ahead of the December meeting of the NATO-Russia Council, Russia declared that it was not interested in any discussion of nuclear confidence building.<sup>12</sup> To a large extent such steps were motivated by the lack of progress in the bilateral discussion on ballistic missile defenses and intensification of the conflict between U.S. and Russian approaches toward solution of some other problems of international security.

#### Obstacle one: Russia’s lack of interest in discussing NSNWs

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<sup>8</sup> Senate Resolution of Advice and Consent to the Ratification of the Treaty Between the U.S.A. and Russian Federation on Measures of the Further Reduction and Limitation of Strategic Offensive Arms (New START), December 22, 2010.

<sup>9</sup> Excellent summaries of these activities can be found in: Katarzyna Kubiak, “NATO and Russia Experiences with Nuclear Transparency and Confidence-Building Measures,” Working Paper FG03-WP No 02, SWP, Berlin, April 2014; Oliver Meier and Simon Lunn, “Trapped: NATO, Russia, and the Problem of Tactical Nuclear Weapons,” *Arms Control Today*, January-February, 2014; See also: Jacek Durkalec, Andrei Zagorski, “Options for Transparency and Confidence-Building Measures Related to Non-Strategic Nuclear Weapons in Europe: Cost-Benefit Matrix,” PISM-IMEMO Workshop Report, Warsaw, July 2014

<sup>10</sup> For one of the most recent statements see, in particular, the footnote 3.

<sup>11</sup> Deterrence and Defence Posture Review, NATO, May 2012.

<sup>12</sup> Oliver Meier and Simon Lunn, 2014; *op.cit.*

Numerous reasons were mentioned why the NSNW issue has been deadlocked. The major reason seems to be the failure to awake any interest on the Russian side in spite of the West's active efforts in this direction.

In the late 2000s, when the campaign to initiate a dialog on NSNWs with Russia was started, such a need was motivated by clearly farfetched reasons as safety and security of non-deployed non-strategic weapons. An argument, in particular, was made that tactical nuclear weapons are more prone to a theft by terrorists compared to strategic warheads. This argument is at least a questionable one.

After the New START Treaty entered into force, U.S. and European experts actively discussed covering non-deployed nuclear warheads (both strategic and tactical) by arms control measures. Supporters of this idea believed that Russia might accept a proposal to set up common limits on deployed and non-deployed nuclear weapons by claiming that such an approach would resolve the problem of so called "breakout" or upload potential (non-deployed nuclear weapons placed at storage).<sup>13</sup> After the New START reductions the United States are going to retain over 3000 nuclear warheads ready to be deployed within days or weeks, twice as much as the permitted number of deployed nuclear warheads. Russia's upload capability will be significantly smaller.

It is true, that the upload potential issue became a strong argument in Russia against START-2 Treaty in the middle of 1990-s and it caused a lot of criticism from the Treaty opponents. Compared to the START-2, the New START Treaty is even worse in terms of disparity in upload capabilities of the sides. However, there are very few voices in Russia who stress the importance of limiting the "breakout" potential. Therefore, it is not surprising that the idea has not created much of the anticipated Russian reaction.

Further attempts to involve Russia into a serious dialogue on transparency and confidence building measures regarding NSNWs on the NATO-Russia track were not more convincing. Moreover, one has to admit that the NATO decision to link a possible withdrawal of U.S. nuclear bombs from Europe with Russian 'reciprocal steps' looks in itself as an attempt to find at least a one area of consensus among the members on the nuclear policy of the alliance.

Russian officials always delicately stressed, that they were not avoiding the dialogue on NSNWs and were ready to discuss it in a context with other more urgent and priority issues (like limiting ballistic missile defenses, creating new architecture of security in Europe, ban on space weapons, etc). At the same time, the representatives of the Russian Defense Ministry were less ambiguous:<sup>14</sup>

*«... The political expediency of moving toward nuclear zero is declared, nobody questions that. However, what practical contribution to advancement of defense capacity and reducing the probability of conflicts in Europe can limits and transparency in the area of NSNWs bring? It would be helpful to us in the Defense Ministry to hear arguments on this respect...Every process of arms reductions should pursue three*

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<sup>13</sup> Steven Pifer, "After New START: What Next?" *Arms Control Today*, December 2010

<sup>14</sup> Yevgeny Buzhinsky, Anatoly Dyakov, Alexander Kolbin and other, "The Future of Non-Strategic Nuclear Weapons in Europe: Opinions," *Index Bezopasnosti*, N3-4, vol 18, Fall-Winter 2012, pp. 169-180

*objectives: reduce the probability of beginning of a conflict, reduce the cost of maintaining the Armed Forces and widen the area of security. From the point of view of widening the area of security, it is likely, that declarations and figures do promote this process. However, the first two points, the main and foreground, in my view, by no means depend on declarations of numbers. From the point of view of the Defense Ministry, our goal is to advance the defense capacity of our state, not to reduce it, or, at least, not to do anything harmful... ”*

One may not exclude that after the relations between Russia and the West come back to normal, in some time, Russia will return to the previous formats of interactions with NATO as discussion of nuclear doctrines or joint safety and security exercises, which held in the past, and have been mostly symbolic by nature. However, it is unlikely that substantial progress in NSNWs area is possible without advances in the solutions of other problems of security that Russia prioritizes. Unlike during the late 1980-s- early 1990s when most of currently functioning arms control agreements had been achieved, Russia will certainly practice a more pragmatic approach. It is more realistic to expect, that on an initial phase, an agreement on some very limited (perhaps, even symbolic) transparency and confidence building measures with respect to NSNWs can be nothing more than a “makeweight” to a package of agreements in a wider area.

Such an experience does already exist. For example, it is well known that the New START requires exchange of telemetry on ICBM and SLBM launches. Unlike to the verification mechanism of the “Old” START, the exchanged telemetry information has no technical role in verifying implementation of the New START provisions by the parties. Nevertheless, the Russian side made concessions in this regard. It understood that otherwise there would be a serious risk of failure of the Treaty ratification in the U.S. Senate. The telemetry information exchange became a “makeweight” to the New START agreement, and it contributed to the treaty approval, which finally succeeded by a light margin.

#### Obstacle two: nuclear reductions and development of modern high-precision conventional weapons

The second reason for the deadlock in resolving the NSNW issue is an existing fundamental contradiction between objective tendencies of diminishing nuclear potential (and its role), on one hand, and development of modern high precision arms – on the other. This contradiction affects both sides – the West, and Russia.

NATO members, who are mostly concerned by Russian NSNWs and vigorously urge to link potential changes of alliance’s nuclear policy with Russian reciprocal measures on NSNW reductions or increasing transparency in this respect, first of all care about reassurance from other members of the alliance on their adherence to the Article V principle: “an attack on one is an attack on all”. They perceive the steps aimed at reductions of U.S. NSNWs in Europe as devaluing these assurances, and therefore insist on compensation – an enforcement of U.S. or NATO general purpose forces on the continent in parallel.<sup>15</sup> On the other hand, Russia perceives

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<sup>15</sup> A more detailed analysis of this fundamental issue is given in: Laurens Hogebrink, “Tactical Nuclear Weapons and (The Lack of) Logic of Reciprocity: ‘Reassurance Within NATO’ vs. ‘Confidence Building with Russia’”,

strengthening NATO general purpose forces as a new emerging threat, which needs an adequate response, and, in any event, such a response does not seem to be reductions of Russia's NSNWs or adapting transparency and CBMs in this area. Is this not a "Catch-22" situation?

A typical example in this respect is the development of the European Phased Adaptive Approach (EPAA) program. The NATO members deploying the elements of the BMD system on their territory perceive the EPAA program as consolidating the alliance. The NATO states hosting U.S. nuclear weapons proposed a possible shift of consolidating roles from nuclear bombs to the BMD system under deployment. Russia at the same time considers EPAA as a threat to its strategic forces. When Russia was keeping its illusions about potential cooperation with U.S. on BMD (2010 - early 2011), it was not that allergic to discussing NSNWs. The impasse in the U.S.-Russian dialogue on BMD led to the complete loss of interest to the theme of NSNWs in the Russian Foreign and Defense Ministries.

The fundamental contradiction between the tendencies mentioned above is applicable to Russia as well. Asked about the circumstances at what Russia would agree to cut its NSNWs, Vladimir Putin, and the Chair of the Russian government at the time, stated on February 24, 2012:<sup>16</sup>

*"...We are not going to give up any of the things that we need... We will only give up what encumbers us and does not bring any benefits. That is all. As for what we need and does not burden us, but on the contrary, offers certain guarantees, we are not going to give it up..."*

Few minutes before he spoke about new challenges on the way to further nuclear reductions:

*«...We see how technology is developing. Our partners really are ahead of us, especially in high precision weaponry. And these precision-guided weapons (I mean today's capabilities and the power of modern munitions) combined with the time of delivery to an intended target become comparable with weapons of mass destruction though they are not technically WMDs. However, the result is not much different, and in the future, probably, will be no different from weapons of mass destruction. So we will eliminate nuclear weapons only when we have this kind of technology. And not a day earlier! No one should have any illusions about that! That's the way it is...»*

If Russia develops and deploys such new high-precision conventional capabilities, NATO members will certainly perceive them as a new threat requiring a military response.

It takes significant political will on both sides to overcome the fundamental problem posed by the tendencies of nuclear reductions and the development of high-precision conventional capabilities. In order to create that political will, substantial repair needs to be done to the relations between Russia and the West badly damaged during this year. However, not doing so

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Discussion Paper, Dutch Pugwash Working Group on "Nuclear Weapons and Nuclear Weapons Free Zones", November 2013

<sup>16</sup> Prime Minister Vladimir Putin meets with experts in Sarov to discuss global threats to national security, strengthening Russia's defences and enhancing the combat readiness of its armed forces, official transcript, February 24, 2012, <http://archive.premier.gov.ru/eng/events/news/18248/>

threatens not only bilateral U.S.-Russian arms control regimes, but also multilateral agreements like the Non-Proliferation Treaty.

# **The Status and Role of Technical Verification from the U.S. Perspective<sup>1</sup>**

**By Nancy Jo Nicholas**

Associate Laboratory Director  
Los Alamos National Laboratory

## **Abstract**

This technical presentation to an audience of policy and technical experts in the field of arms control monitoring and verification will discuss the state of verification science and technology that could apply to nonstrategic nuclear weapons: what tools are currently available, what's in the pipeline, what are the gaps. What does the science of the 21<sup>st</sup> century mean for the policy of the 22<sup>nd</sup> century?

It will provide examples from recent experience at Los Alamos National Laboratory developing and testing attribute verification systems with information barriers. It will highlight three challenges to providing confidence—in the measurement, protection system, and results. The presentation will focus on current work being done in the area of warhead monitoring, verification, and authentication.

Los Alamos has long been recognized as the world's first nuclear weapons laboratory. National and global security was the driving force for our creation and remains our most fundamental mission. We realize this requires us to not only maintain a safe and secure stockpile, but to support efforts that would reduce the need for such weapons and avoid unnecessary risks. We have a rich history of innovation in warhead safety and security and in the development of advanced nuclear technology. Los Alamos has played an active role in driving the science that underpins a wide array of international and multilateral nonproliferation and arms control agreements.

## **Policy drivers for verification S&T**

The size of the U.S. and Russian nuclear weapons stockpiles has been reduced dramatically since the end of the Cold War. The Nuclear Posture Review Report of 2010 describes how the U.S. will continue to reduce the role and number of nuclear weapons.<sup>2</sup> Although there is significant discourse over exact numbers, the downward trend is likely to continue. Throughout this discourse, there is a wealth of information related to the military, geopolitical, diplomatic, budgetary, and technical challenges associated with a path towards very low numbers of nuclear weapons. This paper will focus on the verification challenge.

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<sup>1</sup> This is a draft publication that was prepared for a workshop sponsored by the Center for Strategic and International Studies (CSIS) at the Vienna Center for Disarmament and Non-Proliferation (VCDNP) in Vienna, Austria from 6-7 October, 2014. It is not to be cited or reproduced without the express permission of the author.

<sup>2</sup> <http://www.defense.gov/npr/docs/2010%20nuclear%20posture%20review%20report.pdf> Nuclear Posture Review Report (unclassified) April 2010, U.S. DoD

President Kennedy signed a treaty we couldn't verify. Policy makers set up a new strategic balance situation that required technology that didn't exist yet. Five decades ago, technology developers responded quickly. The Vela Hotel series of satellites were first launched 50 years ago to begin monitoring the 1963 Limited Test Ban Treaty, which prohibits nuclear weapons tests "or any other nuclear explosion" in the atmosphere, outer space or under water.

In the Prague speech, President Obama was clear in stating that the U.S. must not disarm unilaterally.<sup>3</sup> Arms control policy without technology is impotent. There is a symbiotic relationship between the technological challenges and policy that stimulates and motivates technology; it is not a static system. The goals of the original START treaty were met by physical destruction of weapons systems, but to remove the nuclear threat, something else is needed. For this new multilateral disarmament mission, new verification will be required, and that will require technical experts in front end R&D, confidence (and relationship) building measures and joint (or multilateral) verification experiments.



Why is there a need for physics-based inspection techniques in nuclear arms control? Because a piece of plutonium is not like a tank or an airplane – verifying weapons components, or even weapons-useable material implies the need to provide confidence in things that can't easily be seen. These types of agreements may also require methods to confirm that nuclear warheads have been dismantled.

### **Protecting classified data**

Any verification measurement performed on a nuclear warhead must satisfy two seemingly contradictory constraints. First and foremost, no classified information can be released. At the same time, the monitoring party must have confidence in the veracity of the measurement. Historical approaches to these warhead verification challenges can be grouped into two categories: attribute measurements and template matching. The attribute measurements approach is to demonstrate that classes of items have certain agreed-on characteristics. Many warhead characteristics are classified. However, comparing a classified characteristic with a threshold may render the result unclassified. For example, a mass of plutonium greater than an agreed-on threshold might be an acceptable warhead attribute. This approach won't definitively prove that a declared item is a nuclear warhead, but will demonstrate in an unclassified way that it contains weapons-useable material consistent with a warhead.

The template matching approach builds on the attribute measurements concept by storing a classified set of attributes as a "template" of a warhead. Then future measurements of declared items are compared to the template for verification as a warhead. This approach may result in

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<sup>3</sup> [http://www.whitehouse.gov/the\\_press\\_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered](http://www.whitehouse.gov/the_press_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered)  
Prague Speech: A World Without Nuclear Weapons April 2010

faster verifications, but requires both trust in the initial template and storage of that highly classified information.

### **Science-based tools being currently developed or tested**

Geopolitics and the dynamic security interests of nation states create an ever-evolving and complex set of challenges for international efforts to reduce nuclear risks. The resulting demands for scientific solutions are similarly dynamic and complex. Progress will depend on the creativity and dedication of our scientific and technological talent.<sup>4</sup> A recent Defense Science Board (DSB) Task Force on assessing nuclear treaty monitoring and verification technologies highlighted the need to reinvigorate R&D efforts to advance verification and monitoring technologies.<sup>5</sup>

At Los Alamos National Laboratory, our technical strategy for developing technology for arms control initiatives is divided into three primary areas:

1. Deployment of equipment to address today's verification challenges: Los Alamos developed the enrichment monitor, which was used to monitor the down-blending of HEU to LEU in Russian facilities to ensure that uranium was not diverted or lost in the process.
2. Research and development of new technical options for verification: for example Los Alamos's work in quantum cryptography provides a robust method for protecting sensitive data during monitoring activities.
3. Innovative science to meet the verification needs of the future: for example, Los Alamos is developing low-temperature (cryogenic) microcalorimeter detectors for gamma-ray spectrometry and improved nuclear material measurements.

Undoubtedly radiation detection measurements will be required for arms control treaties beyond new-START, for example to count ever smaller numbers of bombs and warheads deployed, in storage, or being dismantled—without revealing sensitive design information. Modeling and simulation play a pivotal role in the development and optimization of radiation detection systems. Models are needed to understand processes in the fabrication as well as in the operation of radiation detection systems. Crystal growth processes, material surfaces, and charge transport in semiconductors are examples of objects and processes where modeling is crucial to improving the performance and fabrication of detectors. An additional necessary component in the development and operation of radiation detection systems is Monte-Carlo simulations, which incorporate and are based on physics models of the instrument, the radiation, and the environment.

However, the problem is larger than radiation detection. Some new technical tools are being considered to support an end-to-end approach for monitoring and verifying non-strategic nuclear weapons. Many of the tools currently being developed tested or evaluated as potential ways to cooperatively verify nonstrategic nuclear weapons under a future treaty focus on a specific

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<sup>4</sup> U.S.-Russian Nuclear Reductions After New START: Summary of a Workshop Exploring Next Steps February 2013 Workshop hosted by the American Physical Society Panel on Public Affairs and the Center for Strategic and International Studies

<sup>5</sup> <http://www.acq.osd.mil/dsb/reports/NuclearMonitoringAndVerificationTechnologies.pdf> Defense Science Board Task Force Report: Assessment of Nuclear Monitoring and Verification Technologies January 2014

element of the verification mission.

1. Warhead measurement: neutron and gamma-ray based nondestructive assay
2. Warhead verification: Attribute measurements with info barriers vs. template matching
3. Facility monitoring: layered sensors, remote monitoring, persistent surveillance, muon radiography
4. Data assessment: big data\* analytics and crowd sourcing
5. Data authentication: quantum cryptography
6. Chain of custody: portal monitors, tags and seals, video surveillance

(\*Big data refers to collections of data sets so large and complex that it is impossible to process them with current tools.)

The nonproliferation and arms control community would also benefit from a test bed to cover the full range of experimentation, testing, demonstration, exercises, and training with nuclear weapons and components.

### **Lab-to-Lab engagement**

Successful technical verification and monitoring has its root in lab-to-lab engagement. The United States and Russia have a long history of cooperation on nonproliferation, nuclear security and nuclear energy. In the wake of Eisenhower's "Atoms for Peace" initiative in 1953, purely scientific cooperation and exchanges were initiated. Starting in the late 1980s, U.S. and Russian scientists engaged in Joint Verification Experiments designed to build confidence in verification technologies to help ratify the Threshold Test Ban Treaty. The Joint Verification Experiments established the exchange visits of technical experts to classified facilities in each country. The growing momentum led to the establishment of "Director's Exchange" visits in early 1992, when the directors of Arzamas-16 (VNIIEF) and Chelyabinsk-70 (VNIITF) visited Los Alamos and Lawrence Livermore National Labs, followed by reciprocal visits to the Russian nuclear facilities. These efforts resulted in the first lab-to-lab contract on joint experiments in pulsed-power generation that took place in 1993, and the Lab directors signed an umbrella contract for additional lab-to-lab activities in 1994. The remarkable pace of these interactions is largely attributed to the strong personal relationships between U.S. and Russian scientists and significant personal interactions between U.S. and Russian Laboratory Directors. However, due to retirements over the last decade in both U.S. and Russia, the number of professionals with experience in verification science and lab-to-lab engagement is shrinking.



*Authentication by Cooperative Design: The Russian-built Attribute Measurement System for Neutrons and Gammas in Sarov*

Further progress on science and technology for warhead monitoring and verification will benefit from reinvigorating and expanding lab-to-lab engagement with Russia, and exploring engagement with other countries (e.g., China, India and possibly countries without nuclear weapons as well) on technical approaches to multi-lateral verification and monitoring.

### Conclusion

The U.S. and Russia will likely engage in a number of treaty negotiations on nuclear weapons and nuclear material in the coming years. In treaty verification the job of scientists is to develop tools that provide confidence – to the stakeholders in our own countries and to some extent to the international community – that all parties are upholding treaty commitments. In all of these endeavors, monitoring verification technology will play a significant role. If technology is to fulfill this role, however, it will have to be aligned with needs of the policy makers. This will require a dialogue between the technology and policy communities. Track-II forums promote such a dialogue in assessing the overall challenges and responses today, along with prospects for new approaches to the verification challenges of tomorrow.

Slides of Session I: Political Factors Affecting NSNW Arms Control  
Jeffrey McCausland

## NSNF Examples from Cold War

- Gravity bombs
- Short-range missiles
- Artillery shells
- Land mines
- Depth charges
- Torpedoes for anti-submarine warfare
- Ground-based surface-to-air
- Ship-borne surface-to-air missiles (SAMs)
- Air-to-air missiles
- Small, two-man portable port truck-portable TNW
- Special Atomic Demolition Munitions
- Earth-penetrating weapons



## Russia, NATO, Arms Control, and Non-Strategic Nuclear Forces

*Dr. Jeffrey D. McCausland, Senior Associate Fellow, Center for Strategic and International Studies (CSIS)*

October 2014  
Vienna, Austria

## Arms Control is a political process

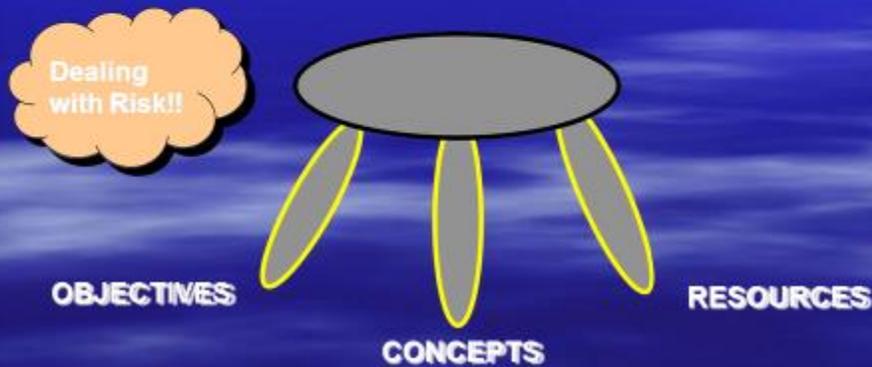
**“War is politics by other means...”**



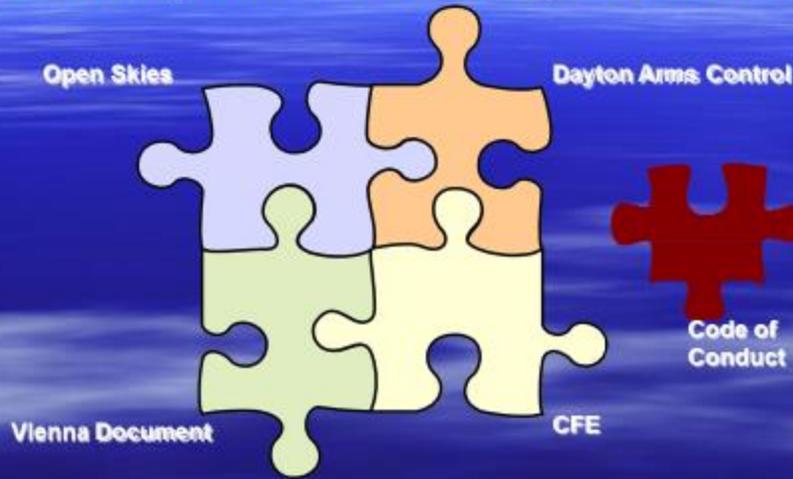
**Arms control requires political will and a “harmony of interests”.**

## Arms control remains a “way” of strategy....

### RELATING ENDS, WAYS & MEANS



## Complementary Nature of Existing Treaties and Agreements



## Factors Affecting Future Efforts

- *Failure to resolve issues concerning the Adapted CFE Treaty.*
- *Success of New START.*
- *Efforts to remove WMD from Syria.*
- *Alleged violations of the INF Treaty.*
- *The crisis between Ukraine and Russia and Russia annexation of Crimea.*



## Reactions in the West

- Development/deployment of NATO Rapid Response force with a “persistent” presence in the East.
- Continued development of the B61 bomb.
- Deployment of the F35 tactical aircraft to NATO partner countries and SLEP by FRG of Tornado.
- Resurrection of discussions in NATO capitals for the need to deploy a phased array BMD.
- Elimination of any possibility of US Senate ratification of CTBT.
- Pressure if Ukraine crisis continues for the US to provide military aid to the Kiev government.

## Is there a way forward? Essential Elements....

- Clear recognition on both sides that this is NOT a “new” Cold War. Common threats from global instability.
- Resolution of questions concerning INF Treaty.
- Continued full implementation by both sides of New START.
- An end to the crisis in Ukraine.

***Does a harmony of interests still exist?***

## Recognize the value of the “process”



## Possible Areas of Cooperation

- Initiate more frequent military doctrine talks.
- Seek additional cooperation IAW/ UN Security Council resolution 1540 (2004)
- Further discussions on site security improvements. Including:
  - Joint threat assessments.
  - How can we collectively address such threats and better safeguard our respective arsenals.
  - Joint recovery exercises and nuclear accident/ incident response.

**Seek to improve/maintain ancillary arms control agreements such as Vienna Document and Open Skies.**



**Arms control is not European specific**

*Can our collective experience be of assistance in these areas?*

➤ **Korean peninsula.**

➤ **Continued discussions with Iran.**

➤ **Tensions between India and Pakistan.**



**It is our collective responsibility to  
provide global leadership and together  
confront new security challenges.**



**Questions and Comments?**

Slides of Session II: Confidence-Building Measures (Technical)  
Nancy Jo Nicholas

Treaty Verification S&T

CSIS Track-II Workshop on Non-Strategic Nuclear Weapons  
October 6-7, 2014

*Nancy Jo Nicholas*  
Associate Director  
Los Alamos National Laboratory



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Unclassified

LA-UR-13-21116



Intro: Why the Field Exists

**Q: Why is there a need for physics-based inspection techniques in nuclear arms control?**

**A: Because a piece of plutonium is not like a tank or an airplane**



The goals of the original START treaty were met by physical destruction of weapons systems, but to remove the nuclear threat, something else is needed.



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## The Objective: Mutually Assured Confidence

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Verification System

Both the host and monitoring parties (and third parties?):

– must provide confidence to the other party in the veracity of their treaty declaration *while not revealing classified information*

– must be able to *confirm independently*, without access to the material, that an object in a sealed container is in fact a nuclear component



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## S&T tools for NSNW

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**Many tools being considered for NSNW focus on one element of the verification mission and most exploit S&T developed for other programs**

- Warhead measurement: neutron and gamma-ray based nondestructive assay
- Warhead verification: Attribute measurements with info barriers vs. template matching
- Facility monitoring: layered sensors, remote monitoring, persistent surveillance, muon radiography
- Data assessment: big data analytics and crowd sourcing
- Data authentication: quantum cryptography
- Chain of custody: portal monitors, tags and seals, video surveillance



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## Measurement Techniques

- Measure gamma-rays, neutrons or heat
- Nondestructive assay techniques measure:
  - radiation from spontaneous decay of nuclear material (**Passive**)
  - radiation induced in the nuclear material by an external source (**Active**)



Fielded n and  $\gamma$  instruments for assay of weapons components



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## The Challenges

- Evaluate the material/object presented (Measurement)
- Protect the host country's classified information (Certification)
- Allow monitors to draw independent conclusions (Authentication)
- Chain of custody



S&T can provide confidence—in the measurement, protection system, and results



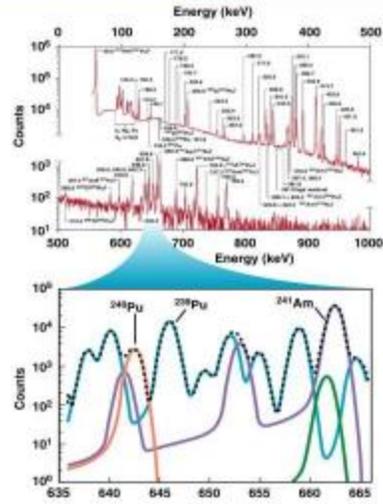
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## Importance of Isotopics

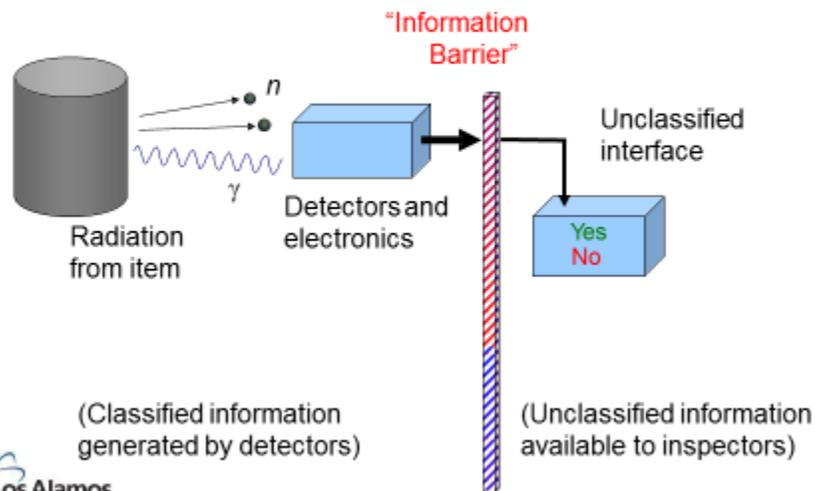
- Weapons-grade plutonium is nominally 6%  $^{240}\text{Pu}$
- Neutron methods are sensitive only to even Pu isotopes
- Gamma methods can measure isotopics, but not usually mass
- Combine  $^{240}\text{Pu}_{\text{eff}}$  mass with  $^{240}\text{Pu}/^{239}\text{Pu}$  isotopic ratio to get **Pu mass**



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## Protecting Classified Information



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## Template Comparison

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- Compares each new item with template
- Proof that an item is unchanged
- May accommodate a shorter measurement time
  
- Do all treaty limited items fit the template?
- Template is probably classified
- How does one initialize the template?
- Only need to fool the system once—during the initialization



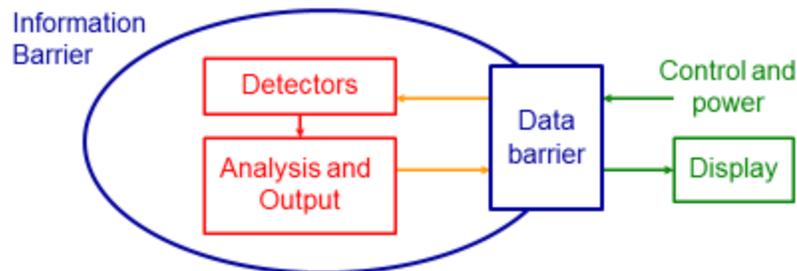
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## An Enabling Technology: the Information Barrier

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## Attribute Measurement

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- Measures agreed unclassified attributes of each item
- Each measurement is independent of previous results
- System can be used with several types of items with the same attributes
- Attributes are necessarily not very specific
- Choice of attributes is very important
- Not only must attribute be unclassified, but the reason to choose that attribute must also be unclassified

## Arms Control Warhead Measurement 2001 demo

The Fissile Material Transparency Technology Demonstration at Los Alamos National Laboratory

- LANL/LLNL collaboration
- Russian audience
- Measurements on U.S. weapon component



Only measurement of its kind ever performed.

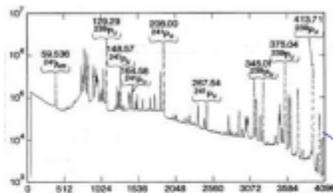


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## Warhead Attributes



Analysis and threshold comparison



- Singles Rate:  $S = F \cdot M \cdot v_1(1+a)$
- Doubles Rate:  $D = F \cdot (D/2) \cdot (cM)^2 \cdot (v_2 + [(M-1)(v_1-1)] \cdot v_1(1+a) \cdot v_2)$
- Triples Rate:  $T = F \cdot (T/6) \cdot (cM)^3 \cdot (v_3 + [(M-1)(v_1-1)] \cdot [3v_2v_2 + v_1(1+a) \cdot v_3] + 3[(M-1)(v_1-1)]^2 \cdot v_1(1+a) \cdot v_2)$



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## Arms Control Data Authentication Challenge

- Everything interesting (the object, the measurement system, and the data) has been hidden.
- If the host has a reason to cheat, ...
- **Why should the monitors believe the red/green lights?**



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## Authentication – Proposed Solutions

Combination of methods

- Joint development
- Construction techniques
  - Modular design
  - Layered approach
- Functional testing
- Random selection
- Validation techniques (reverse engineering)



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## US/Russian Cooperative Development for Warhead Verification



## Authentication: Cooperative Design

- The Attribute Measurement System for Neutrons and Gammas (AVNG)

- VNIIEF/LANL/LLNL collaboration
- Russian construction
- U.S. audience
- Multi-kg plutonium sources



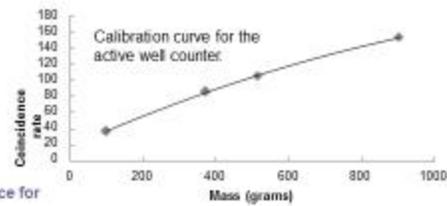
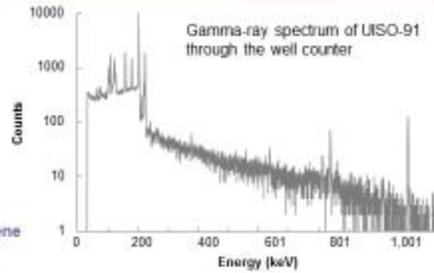
## Active Interrogation behind an Information Barrier



AmLi Source Cadmium Sheet Polyethylene



Typical end plug showing AmLi source for active interrogation of HEU.



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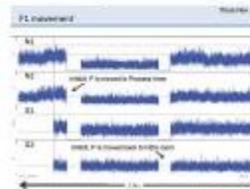
## Arms Control: US-UK Technical Cooperation



US/UK negotiating team



LANL portal monitors and response data



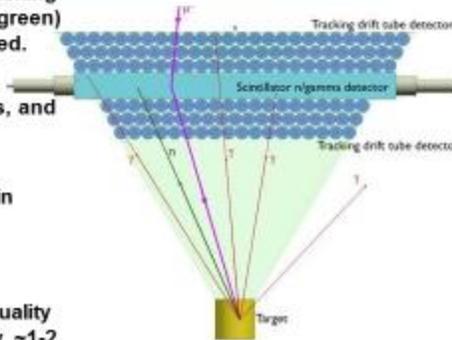
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## Muon Radiography for Warhead Imaging

- Cosmic ray muons (shown in purple) are traced into the object with tracking detectors, and fission neutrons (green) and gamma-rays (red) are detected.
- Relatively more cosmic rays are stopped in high-density materials, and multiple secondary particles are generated in SNM by fission.
- Distribution of incoming muons in coincidence with fission signal provides rough image of SNM distribution.
- Detection efficiency and image quality depend on detector size (typically ~1-2 m), distance to the SNM (also expected to be ~2m) and exposure times (from several minutes to about an hour).



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## Quantum Cryptography for Data Protection for Treaty Verification and Non-Proliferation

- International Cooperation**
  - Protects data without revealing/requiring US keying methodology
    - Data protection for warhead verification
    - Non-proliferation data security, non-repudiations, and integrity to a remote location
    - Active Optical Cables for longer distance, lower power than copper but data security issues at server/storage farms
- Can provide protection from tampering, traffic analysis, message replacement, or jamming**
  - Data cables, even optical fiber data cables, are easy to tap



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LANS Business-Sensitive



## Data Protection Between Sensors and Data Logging System

- QC hardware built into sensors
- Information assurance for data
- Quantum Secure ID for sensors

Sensors with built-in QC

Fiber optic cables,  
no conduit



On or offsite data storage facility



NATIONAL LABORATORY

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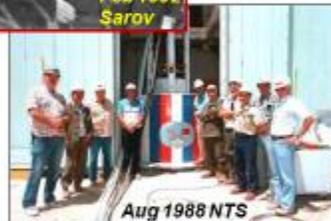
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## Lab-to-Lab Engagement

- All proposals address the need for bilateral US & Russian negotiations; groundwork for multi-lateral engagement
- Lab-to-Lab engagement has proven to be important over the last 20 yrs
  - Scientific cooperation has led to progress (MPC&A, WSSX, IPP & Pu science)
- New US/RF R&D Agreement offers opportunities for expanding engagement



## Conclusion

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- Arms Control Treaty Verification is an important mission
- Most of the physics “toolkit” is in hand, but occasional surprises, for example  $\gamma$  rays from oxide
- “The devil is in the details” -- measurements that work in the lab may need substantial modification for the real world, for security/operational reasons
- Preparing now for future treaties is prudent
  - The timeline of science can be long
  - Confidence take time to establish



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