Universal Transparency: A Goal for the U.S. at the 2012 Nuclear Security Summit

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The Potential for Transparency: North Korea

Global quantitative transparency of nuclear arsenals and fissile materials (universal transparency) is an indispensable complement to arms reduction treaties. It is a necessary element in creating a path to disarmament that can be traveled by all nuclear-weapon states.

For the purposes of this article, that category includes the five countries that have nuclear weapons and are parties to the nuclear Nonproliferation Treaty (NPT)—China, France, Russia, the United Kingdom, and the United States—as well as four states that are outside the NPT framework and have or are widely presumed to have nuclear weapons: India, Israel, Pakistan, and North Korea. The first three have never been part of the NPT. North Korea joined the NPT, but has declared its withdrawal.

Universal transparency is important for numerous reasons, but its primary aim should be a meaningful demonstration of a commitment to global security by removing the unnecessary secrecy surrounding nuclear weapons programs while preserving truly necessary secrecy, such as weapons designs. Undoubtedly, for some states, universal transparency will be a difficult pill to swallow, and some concessions will have to be made to take account of their particular geopolitical and threat environments. Also, transparency declarations ultimately will have to be confirmed by verification measures. Nevertheless, transparency should be seen as an essential tool to demonstrate a state’s tangible commitment to the eventual elimination of nuclear weapons and unsecured weapons-usable fissile materials worldwide. By being open about their stockpiles of weapons and materials, states remove the justification for excessive hedging by their nuclear-armed rivals. Similarly, such transparency could help undermine the rationale for maintaining or pursuing a nuclear weapons capability by countries beyond the current nuclear powers, although transparency is very unlikely to be sufficient for that purpose unless it is combined with other substantive measures.

In April 2010, President Barack Obama hosted a nuclear security summit; of the nine states in question, only North Korea was absent. Transparency underlies nearly every commitment made during the summit and in its communiqué. A follow-on summit will be held in South Korea in 2012. To prepare for that meeting and to ensure the summit becomes a biennial fixture in the nonproliferation regime, the United States must lead by example and press for an agenda consisting of the following topics:

- Develop a concrete path and time frame for complete declarations of nuclear arsenals and fissile material stocks by all states possessing nuclear weapons and significant stockpiles of fissile materials.

- Discuss and define acceptable technical and procedural measures that will demonstrate confidence in the accuracy and credibility of state declarations of nuclear arsenals and fissile materials.

- Outline a timeline, agenda, and potential forum for inclusion of the accounting and verification of fissile material in waste within the process of universal transparency.
The 2012 summit has the potential for enormous success if it can accomplish most or all of the above suggestions on the eventual universal transparency of nuclear warheads and fissile materials. In addition, the international community must come forward with tangible support of the numerous commitments that the Obama administration and several U.S. allies have made toward a world free of nuclear weapons. The stage has already been set.

The Importance of Disclosure

In 2008, French President Nicolas Sarkozy was the first politician to disclose the arsenal of a nuclear-weapon state, 300 active nuclear warheads that would be reduced to about 290.[2] In 2010 the United States announced it had 5,113 active and inactive warheads,[3] marking the first time a nuclear-weapon state had specified the total number of warheads in its arsenal. After the U.S. declaration, British Foreign Secretary William Hague declared in the House of Commons that the United Kingdom would limit the number of its warheads to 225 with no more than 160 being operationally available, leaving 65 warheads in inactive status. This number was subsequently revised in the Strategic Defence and Security Review to not more than 180 deployed and nondeployed nuclear weapons, no more than 120 operationally available warheads, and a maximum of 40 warheads on each submarine.[4] The unilateral actions by France, the United States, and the United Kingdom toward greater transparency regarding their nuclear arsenals are significant initial steps consistent with the eventual goal of a world free of nuclear weapons. The U.S. declaration of its nuclear arsenal should be seen in light of earlier, equally important unilateral declarations of stockpiles of plutonium and highly enriched uranium (HEU).[5] Transparency on the part of three of the NPT nuclear-weapon states sets an example, but it will not provide a foundation for further progress until Russia and China also have made complete declarations of their nuclear arsenals and stocks of fissile materials.

China already has gone some of the way toward providing information on the size of its nuclear arsenal and its future intentions. Specifically, the Chinese Foreign Ministry declared in 2004 that China had the smallest nuclear arsenal of all the NPT nuclear-weapon states. This statement by China provided an indirect indication that China had fewer than 200 deployed nuclear warheads.[6] The United States must build support within the global community by incentivizing a fuller and more current declaration by China. Yet, residual ambiguity by China on the size of its arsenal is likely to persist as a deterrence measure[7] and in the absence of a declaration of the size of Russia’s much larger arsenal. If Russia were to reciprocate U.S. actions so far with declarations that are equally complete, the resulting bilateral declarations would cover roughly 96 percent of total global military fissile materials stockpiles and more than 90 percent of nuclear warheads worldwide. Therefore, it is critical that Russia make some form of declaration soon.

The equally important unilateral declarations of stockpiles of plutonium and HEU that the United States already has made are in themselves a symbol of commitment to disarmament. They clarify to the international community the size and characteristics of the inventory that ultimately will need to be verified and not reconstituted into the arsenal.

The British, French, and U.S. declarations have placed pressure on Russia to become more transparent about the number of its strategic nuclear weapons. In fact, very soon after the U.S. and British declarations, a spokesman for the Russian Foreign Ministry, Andrei Nesterenko, suggested the possibility of reciprocal declarations on deployed strategic delivery vehicles and warheads on the condition that the New Strategic Arms Reduction Treaty (New START) be ratified.[8] This is a welcome development, but the omission of nondeployed warheads and nonstrategic weapons is a vast, undesirable gap. To make a positive global impact, a Russian declaration must be thorough, official, and public. If it is not, it may not provide anything that was not covered by the bilateral information sharing requirements of New START. Nonstrategic nuclear weapons are slated to play an integral role in U.S. plans for follow-up negotiations to New START. The United States should make an eventual Russian declaration of all deployed and nondeployed warheads and, at a minimum, all military fissile materials an integral part of its diplomatic strategy.

Open-source reporting on the U.S. nuclear arsenal proved to be quite accurate. The margin of error will likely be much larger for Russia. Therefore, an official declaration by Russia is all the more important. Strategically, Russia has little to lose from transparency in the matter of warheads and
fissile materials, in part because its stocks are so enormous; there is simply no conceivable advantage that any third party might gain from confirmation of this already well-known fact. Moreover, the United States has made declarations of the size of its arsenal and its military fissile material stockpile. A complete declaration by Russia will probably bring to light inaccuracies, at least some of which are likely to come from the difficulties of accounting fully for fissile materials, for instance in processing plants.\[9\] Despite the potential embarrassment, it is important for Russian and global security to bring these material errors to light. Moreover, Russia would have company in this regard.

Discrepancies in inventory already have been a significant issue during the declarations of fissile materials by the United States and the United Kingdom.\[10\] The sooner a state discloses its fissile material inventory, the less problematic it will be for that government to account accurately for the material and to bring to the fore the question of how residual uncertainties will be handled in the disarmament process. The United States should try to overcome this obstacle by encouraging Russia, as a first step, to make a declaration of its current military stockpiles. (All five NPT nuclear-weapon states provide annual declarations of their civilian plutonium stocks to the International Atomic Energy Agency [IAEA].)

Transparency among nuclear-weapon states is essential as a benchmark for disarmament and provides tangible evidence of a commitment to disarmament. The United States also must engage non-nuclear-weapon states to encourage and facilitate a graduated process of universal transparency on the part of NPT and non-NPT nuclear-weapon states. After all, the responsibility for disarmament under Article VI of the NPT does not lie solely with the nuclear-weapon states.\[11\]

Transparency and the Non-NPT States

One way to see the critical importance of transparency as a symbol of disarmament in relation to the three non-NPT nuclear-weapon states that were present at the 2010 nuclear security summit is to consider their stance on the NPT. Because the NPT would require them to become parties as non-nuclear-weapon states, they have rejected the treaty and are unlikely to change their position in the foreseeable future. Transparency among the NPT nuclear-weapon states is one step that could foster more trust and bring the non-NPT nuclear-weapon states further into the nonproliferation regime.

In that context, the recent nuclear security summit represented a significant development with regard to the three non-NPT nuclear-weapon states. They were at the summit and approved the communiqué, as did a number of Middle Eastern states. Although observers have noted the relatively weak content of the communiqué, there has been little attention to the historic first that three non-NPT nuclear-weapon states agreed to a near-global consensus document on securing all fissile materials in a very short time. The international community has not seized on the strategic significance of this action in the context of disarmament. The NPT nuclear-weapon states now have a novel diplomatic pathway to begin bringing non-NPT nuclear-weapon states into the transparency process at an early stage of disarmament.

Delineating steps toward fissile material declarations, in the context of the 2012 nuclear summit, would not constrain the non-NPT nuclear-weapon states in the same way that declaring their nuclear arsenals would, but it likely still will be a significant challenge. For example, Israel is reluctant to declare that it has nuclear weapons, much less provide numbers. Israel also has not been supportive of discussing its fissile material stockpiles within the context of potential negotiations on a fissile material cutoff treaty (FMCT). Similar concerns would surround the unsafeguarded nuclear programs of India and Pakistan.

Also important is some of the transparency language that appeared in the final document of the 2010 NPT Review Conference. Among several other statements in support of increased nuclear-weapon-state transparency, the most notable is in paragraph 94: “The Conference notes the increased transparency of some nuclear-weapon States with respect to the number of nuclear weapons in their national inventories and encourages all nuclear-weapon States to provide additional transparency in this regard.”\[12\] Action 16 in the document includes language supporting declarations to the IAEA by nuclear-weapon states of all fissile materials designated excess to military purposes. There are also references in the final document to adhering to the 13 “practical
“steps” that were agreed at the 2000 NPT Review Conference, with step 9 calling for “increased transparency by the nuclear-weapon States with regard to their nuclear weapons capabilities.” One other venue where universal transparency will be essential is in the development of an FMCT in the Conference on Disarmament.

**Tracking Fissile Materials**

Uncertainties in fissile material quantities arising from measurement errors, holdup in production equipment, and discards to waste can be much larger than amounts needed to produce a single nuclear bomb. The problem is well known in the civilian sector. For instance, it took two years to resolve an accounting discrepancy of 70 kilograms of plutonium—enough for several bombs—in Japan’s civilian plutonium-fuel fabrication facility; fortunately it ultimately was discovered that most of it was held up as dust in plant equipment. Similar problems exist in the military sector. Addressing uncertainties on fissile material in waste will become an increasingly important issue, especially during the advanced stages of disarmament of each state’s nuclear arsenal. The inability at least to attempt to account for this material fully will be a concern with regard to any state that has a nuclear breakout capability.

The importance of this issue came to public notice as part of the openness initiative of Secretary of Energy Hazel O’Leary in the mid-1990s. Compilation of plutonium-production records leading up to the publication of the 1996 Department of Energy report “Plutonium: The First 50 Years” revealed two types of accounts for plutonium in waste. The first set of numbers is in an Energy Department safeguards account, known as the Nuclear Materials Management and Safeguards System (NMMSS); the second set is reported by the waste and environmental management operations of Energy Department sites. The amounts of waste in the two accounts did not match. Even though the data had the appearance of accuracy, reporting each waste number to the nearest 0.01 kilogram, the cumulative discrepancy between the two accounts was multiple orders of magnitude greater than that amount. There was some confusion as to whether they were tracking the same thing. The Energy Department expressed confidence in the plutonium-inventory declaration, saying that even small inventory differences were “always carefully investigated.”

Yet, the mere exercise of compiling the military plutonium inventory did not bear out this confidence. The problem was deemed serious enough that O’Leary formed a working group “to resolve differences from these [materials accounting] methods, and to make recommendations on the appropriateness of making changes to how [the Energy Department] tracks its plutonium inventories.” No public information is available on the outcome of the working group’s investigation, if there was one. It remains unclear which of the two numbers was correct or, indeed, if both were inaccurate and to what degree.

The critical importance of transparency is made eminently clear here. The very exercise of compiling data for public release in the United States brought to light discrepancies far larger than believed possible. A more thorough approach to nonproliferation and disarmament would necessarily include addressing this issue as well.

Fissile material accounting in production processes, including discards to waste, in other states possessing nuclear weapons is unlikely to be better. Whether or not it is, attempting to account for the significant amounts of fissile materials in waste, at least in Russia and the United States, would ensure that materials tracking and safeguards against diversion have been implemented as fully as possible; it would help define methods for such accounting as part of the disarmament process.

Other states possessing nuclear weapons or producing unsafeguarded nuclear materials in much smaller quantities might have an advantage of not having to account for such large legacy or current amounts of fissile material. To ensure that they do not create a legacy issue with these materials as well, such states should attempt to adopt accurate and, when possible, more transparent accounting methods from the start.

Fissile material in waste is a sensitive area of transparency that cannot be ignored. All states involved in the 2012 summit should address it as part of topics covering fissile materials.
Conclusion

Transparency has been an imperative for Obama since he took office. This priority has been demonstrated by his administration’s numerous commitments to nonproliferation and disarmament that involve transparency in some form. In order to meet these commitments, the United States must continue to lead and encourage other countries to adopt the goal of universal transparency as a reciprocal and vital step toward building a foundation for a world free of nuclear weapons.

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ENDNOTES

1. Universal transparency of nuclear arsenals and fissile materials is a flexible concept in that a state may consider declaring only deployed nuclear warheads or only excess military fissile materials. The recommendation of this article is for consideration of all forms of nuclear warheads, both active and reserve, and all fissile material inventories, including those in waste. Such a definition provides a more thorough and meaningful interpretation of quantitative transparency (transparency with regard to numbers and quantities, rather than characteristics such as whether a weapons system has been upgraded). In this article, the term “universal transparency” refers to the more expansive definition.


3. The Department of Defense’s definition of active and inactive is the following: “Active warheads include strategic and nonstrategic weapons maintained in an operational, ready-for-use configuration, warheads that must be ready for possible deployment within a short timeframe, and logistics spares. They have tritium bottles and other Limited Life Components installed. Inactive warheads are maintained at a depot in a non-operational status, and have their tritium bottles removed.” See www.defense.gov/npr/docs/10-05-03_fact_sheet_us_nuclear_transparency__final_w_date.pdf 10/14/2010.


5. Global civilian fissile material stockpiles of about 250 metric tons of plutonium and 70 metric tons of HEU (only 1.3 metric tons of HEU are under voluntary-offer agreements in NPT nuclear-weapon states) are essentially all declared and under IAEA safeguards. In the case of the five NPT nuclear-weapon states, the IAEA arrangements are “voluntary” because these states are not required to have inspections even for civil nuclear materials under the NPT. Civilian fissile materials in France and the United Kingdom, however, are subject to EURATOM inspections.

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The potential for transparency to provide an opening in tough situations was illustrated in December 2010 during an unofficial visit by a U.S. delegation I led to North Korea at the invitation of Kim Kye Gwan, the former nuclear envoy and now first vice minister of the Ministry of Foreign Affairs. The goal of our delegation, which arrived in the midst of high tension and the possibility of war, was to help reduce the tension on the Korean peninsula.

We discussed the nuclear issue in some detail. The North Korean leadership stated that they have enough nuclear weapons and that they want a centrifuge uranium-enrichment plant for energy purposes. Moreover, they said that denuclearization was the last wish of their “Great Leader,” Kim Il Sung, who died in 1994. They said they are ready for dialogue or confrontation and that denuclearization depends on U.S. attitudes toward these matters. In my view, those proceedings showed that fissile material accounting, monitoring, and declarations could be among the most important steps not only to the resumption of negotiations on denuclearization, but also to integrating North Korea into a larger process of disarmament.
that would include long-range ballistic missiles, weapons of mass destruction, and perhaps conventional arms.

North Korea’s willingness to sell 12,000 fresh fuel rods to South Korea and to allow International Atomic Energy Agency monitoring teams back into its nuclear facilities was encouraging, as is the potential resumption of negotiations. Although the universe of North Korean nuclear materials is significantly larger, the North Korean offer indicates one nuclear component of what might be a fruitful path to a reduction of tensions. Transparency of nuclear materials is the key.

Establishing a process through which North Korea could attend the nuclear security summit in Seoul in 2012 would be complex and maybe impossible, but a successful effort would bring all the essential nuclear players around the table for the first time on the issue of transparency. That is the issue on which North Korea seems to be most ready for talks and possibly action.

Source URL: https://www.armscontrol.org/act/2011_01-02/Richardson