



## Thinking Through Nuclear Security

By Mark Stout

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While nuclear weapons are *not our future*, they are *in our future* and will be for a very long time. Nuclear weapons--ours and others--will go away when their value is at or approaches zero, which is unlikely unless these weapons are: a) rendered obsolete by defensive nuclear weapons technology--technology that has yet to fully emerge--that makes offensive nuclear attacks impotent; or are b) superseded by superior weapons, neither of which are on the horizon. If today's nuclear weapons are overcome by some yet-to-be determined technology, it may mean even more terrifying (chemical or biological?) or powerful (cyber or directed energy?) weapons have become available, or because we've succeeded in making the world safe for full-on conventional war.

Now, with that grim throw-down as both background and a point of departure, consider the "new" START treaty and its companion document, the Nuclear Posture Review. Although START still requires ratification by both the US Congress and Russian Duma, when it enters into force, its effect will be a largely symbolic post Cold War head nod resulting in incremental reductions in U.S. and Russian strategic nuclear weapons and delivery systems. Reductions in tactical nuclear weapons, where Russia holds an approximate 2000-to-200 advantage over the U.S., were purposefully ignored (TART anyone?). I'll address that issue in a separate --and certainly much thornier-- examination. Multilateral nuclear weapons treaties with nuclear states China, Pakistan, India, and others are currently beyond the pale, and Pakistan is reportedly making fuel for a second generation of nuclear weapons as you read this.

The NPR of course, is not a treaty. Rather, it is a broad policy document and declaration of intent designed to steer U.S. nuclear strategy and capabilities for the next five to ten years. It differs most significantly from previous NPRs--this is the third--in that it offers additional restrictions to the U.S. declaratory policy, which are the conditions under which we might *use* nuclear weapons for warfighting effect (albeit reserving the right to change our minds should conditions warrant). Actually, nuclear weapons are *used* 24/7 (although not for warfighting effect) in that they shape the global security environment by deterring potential adversaries and simultaneously providing assurances to our friends and allies.

However, of more *immediate* significance than either START or the NPR is this week's Nuclear Security Summit. The Nuclear Security Summit has in fact prompted international-level agreement and will hopefully move the world towards action in preventing potential nuclear terrorism. The requirement to prevent nuclear proliferation and nuclear terrorism is actually the NPR's top objective, and while reasonable people can disagree on its actual ranking (because the NPR's number five priority is to sustain a safe, secure, and effective U.S. nuclear arsenal),

the topic's importance is still inarguable. Much of this NPR/Nuclear Security Summit objective has to do with securing 'loose nukes.'

While 'loose nukes' is something of a misnomer (but not as bad as 'nuclear hair trigger'--don't get me started) and comes across as a fear-phrase, the term has come to serve as defense community lingo for nuclear materials, weapons, or knowledge which might fall into unauthorized hands. However, perhaps the most significant loose nuke concern is it appears *we may not know what we don't know*, or restated, we might have unknown unknowns. Specifically, we can't know for certain if there are insecure nuclear materials or weapons *that we are unaware of*. Not knowing makes the challenge of finding the loose nukes, should they exist, pretty difficult and makes proving that proper securing actions have been taken impossible. Still, loose nukes can never be reduced to just a drill in paranoia because even if all nuclear weapons and materials are fully secure, containing nuclear knowledge has shown itself to be a massive challenge.

The problem is at its knottiest in that even fully accounted for and secured loose nukes mean little if North Korea, Iran, or insiders in nuclear states are making their fissile materials and know-how available to others. Still, as with missile defense, it's a problem worth addressing. After all, even if we can't do everything, that doesn't mean we shouldn't do anything.

Additionally, there is the ongoing issue of the physical security standards for nuclear weapons and materials that are too often described as substandard or inadequate. The good news is even as you have read reports regarding the world's nearly *five million pounds* of fissile material, what's largely ignored is that all the world's highly enriched uranium and weapons plutonium would fit easily into a 20 by 20 by 20 foot cube. The flip side is a smallish amount of nuclear material might not be difficult to hide: only about 50 pounds of highly enriched uranium--about the size of a softball--is needed to build a Nagasaki-like weapon.

A final nuclear security imperative beyond loose nukes and physical security should be in the area of nuclear attribution, which is a potentially powerful deterrence tool. Global nuclear forensic programs should be fully developed in order to characterize the sources of nuclear materials with their owner's 'return addresses' (as well as understanding other 'characterizing items' such as bomb design). The NPR wisely calls for improved nuclear forensics and attribution.

Improvement in nuclear forensics would enhance deterrence by minimizing nuclear anonymity to hold proliferators accountable for their actions. Similarly, nuclear forensics allows for *exclusion*, so if the bomb doesn't fit, we must acquit (so to speak). Suspecting Iran passed a nuclear weapon to Hezbollah is one thing. However, knowing they provided source nuclear materials via a definitive nuclear signature is another and allows a more appropriate security response. If the nuclear states would agree to place unique markers in their nuclear materials and share this information or even to more clearly identify contaminant or impurity patterns, attribution could be greatly strengthened.

Regarding nuclear proliferation, the thorny twins, North Korea and Iran never seem to leave the building. Based on the observed behaviors of these two nations, it would seem naive at best and dangerous at worst to think they will play by a set of rules or a follow a legal regime. This is

because an integral part of an effective legal regime depends first on detecting illegal activity, and then in having a meaningful way to punish the perpetrator.

The first issue, detecting illegal activity, is a massive challenge unto itself, especially in adversarial and closed societies such as North Korea and Iran. The second issue, punishment, openly reveals the impotence of arms control as a conclusive security tool--the global community has long had ways, but no agreement on how to use these ways to deal with North Korea and Iran. The phrase "legally-binding," which is commonly thrown around in arms control circles, only has power if the legal regimes of detection and punishment themselves have power. So while "legally binding" may sound like a profound and solemn assurance to most Americans, the term seems to actually carry very little weight in global thermonuclear politics.

While the Nuclear Security Summit may in fact yield improvements in U.S. national security and some elements of the NPR can help, the new START treaty does not appear to provide any sort of security revolution. Still, that's OK. There are no known bonus points for speed in this sort of endeavor and as such, a security evolution should do. After all, as the Kellogg-Briand Pact shows, lasting improvements in national security are seldom guaranteed by arms control treaties or policy statements.

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