20141103 APPAM Talk Reinhardt

Context:

- 13-15 minutes for presentation
- I am the last of 4 which the previous talks being:
    - Fearey – discussion/presentation (with slides?) drawn/leveraged from the 2010 NPR on the role of the government's nuclear agenda and the role of Deterrence, in the larger policy construct.
    - Hingorani – NPR guidance and evolution of the 3+2 strategy and nuclear weapons arsenals in the face of global zero.
    - Saunders – discussion/presentation on the role of the US extended deterrence commitments to regional stability (NATO, Japan, South Korea, +others) and its role in limiting nuclear proliferation

National Laboratory Roles Beyond Deterrence

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As we have heard, the national laboratories play a fundamental and critical role in deterrence and reassurance. Simply put, the national laboratories have the responsibility to develop and maintain the capabilities required to deter adversaries and reassure allies with whom we have security commitments. My purpose is to discuss some of the other roles that the national laboratories play in nuclear matters that enhance stability – those are the roles "beyond deterrence." I will speak about the first two roles briefly and focus on the third role as I believe adds the most to this discussion. Also, it is important to note that I don't believe these are the only roles national labs play, but are roles that I felt should be also highlighted in this discussion.

Role 1: Strong National Labs Hedge Against Technology and Threat Surprise

As other nations developed new weapons and military capabilities, especially nuclear, the national laboratories have provided irreplaceable expertise to the U.S. government that has helped to inform the policies that were created and actions that were taken in response. Having scientists and engineers that had deep experience and expertise dedicated to nuclear weapons matters allowed the U.S. to better evaluate the events in the world around us, and understand the potential implications. This extends well beyond nuclear weapons into matters of nuclear and radiological terrorism, as well as into matters of chemical and biological weapons and cyber threats. The labs have had a significant role in informing the government on all of these matters.

Role 2: Strong National Labs Create the Technical Foundation for Nuclear Arms Control and Disarmament

Nuclear arms limitation or reduction treaties require verification in order to be effective. National laboratory scientists and engineers have been working for decades on arms control concepts and the associated verification. Their work has created the technical

foundation that generates confidence in arms control initiatives for policy makers and negotiators. This work allows for arms control and disarmament agreements to be put into force.

An early example is the Limited Test Ban Treaty in 1963. The original treaty proposals sought to disallow all nuclear testing. The U.S. and U.K. demanded on-site inspections of Soviet test facilities to verify that no underground testing had taken place. However, the Soviet Union was unwilling to agree to that at the time. As a compromise, the Limited Test Ban Treaty was proposed to prohibit everything but underground testing. The U.S. created the Vela satellite system that relied on sensors built at Los Alamos and Sandia to verify treaty provisions. The deep knowledge and expertise in the U.S. lab system created the Vela sensor systems and the ability for the U.S. to verify the treaty for itself.

Role 3: National Labs Enable Nuclear Cooperation

This brings me to the last "beyond deterrence" role I am going to talk about and where I will spend the remainder of my time: cooperation with other countries on nuclear matters. Nuclear cooperation builds confidence between countries by reducing ambiguities and misperceptions about their respective nuclear programs, both civilian and military. It also allows countries to work together on mutual security concerns and build trust between nations.

Cooperation between opposed nuclear powers goes back to the beginnings of the Cold War as each side sought to put limits on the arms race. Each country relied on its own technical systems for verification of the 1963 LTBT agreement. The signing of Threshold Test Ban Treaty in 1974 marked a significant step forward in many regards, not the least of which was the unprecedented technical cooperation it created between the U.S. and Russia. It was the lab systems in both countries that really enabled this cooperation.

In order to ratify the TTBT, both the U.S. and Russia had to agree to a verification protocol. This led to the two-way sharing of nuclear weapon test data, the cooperative development of measuring systems and technologies, and collaborative research and experimentation. For example, in 1988, the U.S. and Russia began the Joint Verification Experiment, where each side would observe a nuclear weapons test, in-person, at each nation's test sites, in order to collect data that would enable the verification the TTBT and future arms control agreements. These activities also built technical and personal relationships between scientists that would become the foundation for interactions during the 1990s.

After the collapse of the Soviet Union in 1991, it became clear that in some ways, nuclear dangers had increased. The primary fears had become the disposition of weapons and materials in the Former Soviet Union, and the prevention of the uncontrolled spread of nuclear knowledge. How would the new independent states formed by the dissolution of the Soviet Union handle the nuclear weapons systems and installations left behind? Without the Soviet government in place, who was going to pay the guards protecting sensitive facilities and storage areas? Who was going to make sure that nuclear weapons didn't become bargaining chips for disenfranchised generals? Who was going to make sure

that the scientists who possessed nuclear weapons design knowledge didn't march off to work for the highest, or most persuasive, bidder?

The solution was to increase the cooperation between the U.S. and Former Soviet Union dramatically. Scientists and engineers from the U.S. national laboratories built upon the technical and personal relationships they had developed over the previous decades. They focused on issues of nuclear security and safety, including weapon dismantlement, material protection control and accounting, physical security and other projects that addressed mutual concerns. They also collaborated in fundamental and basic research. There was clear benefit to cooperating and the labs on both sides worked together to do so.

The 1990s could be viewed as some of the best and most promising years in U.S.-Russian cooperation on international security issues. Over the 2000's, and especially with the recent activities in the Ukraine and Crimea, the relationship has become increasingly strained. While many U.S.-Russian interactions have been suspended, certain core security issues have remained on the table for continued collaboration. These include issues of nonproliferation, counterterrorism, and disarmament agreements.

The U.S. national laboratories have a long history of being the "science ambassadors" of the nation. They have been tremendously successful in helping to reduce security threats to the U.S. and to the world by promoting cooperation and building confidence with nations with which the U.S. has critical strategic relationships. This should continue.

The Future

Personally, I believe that the two most important near-term roles for the U.S. labs that can have material impact on international security through international technical collaboration are still with Russia and China. In the Russian case, we have seen a severe degradation in the level of engagement. This does not bode well for future arms control treaties. However, continued U.S.-Russian reductions are seen as a key factor for the involvement other nuclear-armed nations in disarmament and arms control agreements. Reviving technical exchanges and collaborations between the two nations is going to be critical in developing the confidence and goodwill it will take to continue working on nuclear arms control with Russia.

In the Chinese case, my perception is that we are at the beginning of a new expansion of U.S.-Chinese collaboration on nuclear security issues. We should be seizing this moment to build strong and lasting cooperative initiatives around mutual security concerns, especially nuclear and radiological terrorism event response and the safety and security of nuclear power plants. In recent discussions in China, I saw an enthusiastic and talented group of young researchers and a cadre of leadership that is increasingly open to collaboration. The challenge is going to be building these relationships in such a way that does not aggravate historical sensitivities, but instead helps to put them behind us. Getting the cooperative security relationship with China right is probably one of the most important challenges facing the U.S. diplomatically, as it will have effects that are likely to last many decades.

If the U.S. wants to work towards a safer and more peaceful world, then technical engagement on matters of international security is one of the most powerful diplomatic tools at its disposal. The national laboratories do play critical roles beyond supporting deterrence. First, they hedge against technological surprise, and second, they create domestic confidence in verification regimes; two roles (of many) that must be served for continued disarmament initiatives to be successful. They also enable international collaboration and technical cooperation through providing science, technology, and technical expertise. This role is a powerful complement to other diplomatic tools, especially when focused on areas that are perceived as mutually beneficial. International engagement between U.S. national laboratories and their foreign counterparts can help build different dimensions of confidence that complement deterrence and help stabilize strategic relationships.