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Aligning Business Interests and Nonproliferation Goals

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Disclaimer: this presentation represents my own views, and should not necessarily be attributed to official policies and positions of the U.S. Government.

Thank you to the leadership and organizers of this conference hosted by the Japan Atomic Energy Agency and the Japan Institute of International Affairs. It's a pleasure to be here with so many friends in Japan and from around the world.

The nuclear energy renewal is real but fragile – nuclear is a brittle fuel, globally interconnected and vulnerable to upsets from events half-way around the world. Upsets can come in many forms, whether safety incidents such as we have experienced before, or failures on terms of finance for new plants. One of the surest ways to destroy the nuclear renewal would be for there to be some kind of incident involving misuse of nuclear materials or nuclear technologies, by countries or terrorists, to build weapons. This gives the nuclear industry an enormous stake in contributing to a nuclear energy system that is resistant to misuse. Much discussion has been spent on proliferation resistance from the point of view of technology, and from the point of view of administrative arrangements. I believe that we need to consider the concept of proliferation resistance, or better put – secure fuel cycles, in the additional context of how they relate to the pressures and incentives of business. For too long, the nuclear energy business has looked at nuclear security as a burden, as a drain on the bottom line. We need to

shift that equation, and think about how to create nuclear energy systems in which doing right by security is also doing right by shareholders. In other words, how do we make nuclear security good for business, and make the nuclear business good for security?

Let me first be specific about the sources of proliferation risk in the nuclear energy context. To mention these risks is not to question the legitimacy of such activities; it is simply to note the responsibilities that accompany their use. We should keep in mind that a light-water reactor by itself poses no proliferation risk – this is an advantage as we consider the growing demand for nuclear energy in the context of global economic development and reducing carbon emissions. The risks come from the inherently dual-use nature of current fuel cycle technologies – enrichment and reprocessing. Again, fortunately, a very small number of such facilities can serve a widely distributed set of power plants around the world. Additional risks come from existing stocks of highly enriched uranium and plutonium – whether in small quantities such as at research reactors, or in large civilian fuel cycle plants, or in military programs. These materials call for special care and attention to prevent their theft or misuse. Looking to the future, fast breeder reactors fueled with highly enriched uranium or plutonium could be additional sources of proliferation risk, as well as the fuel cycle facilities associated with these or other potential nuclear energy concepts. Looking across this spectrum, it is clear that nuclear industries have a powerful role to play in managing risks from each of these elements.

We have already proven examples of aligning interests between business and nonproliferation.

One of the earliest cases of such alignments is the US-Russia agreement in 1991 to permanently eliminate 500 tonnes of highly enriched uranium coming from Russia's dismantled nuclear weapons, and ship the resulting low enriched uranium to the U.S. for use as fuel in nuclear power plants. This agreement had obvious nonproliferation and nuclear security benefits through encouraging weapons dismantlement and destroying material that might be stolen or reused for weapons. But it also had significant business advantages: 1) It assured a steady flow of revenues to Russian nuclear plants involved in blending down the HEU at a time of dire economic conditions; and 2) it made the output of these weapons materials

available for use in nuclear power plants, in many ways becoming a virtual uranium mine combined with a virtual enrichment plant. The resulting LEU has provided 50% of U.S. nuclear power for well over a decade.

On a much smaller scale, U.S. HEU has been transformed into a nonproliferation benefit through the creation of the U.S. Assured Fuel Supply. This initiative is transforming 17 tonnes of excess HEU into a stockpile of LEU that will underpin the global market for nuclear fuel by providing a back-up supply that can be drawn on in case of unanticipated disruptions in fuel supplies for customers in countries in good standing with the international nonproliferation regime. Like the U.S.-Russian agreement, this project prevents theft or reuse of HEU for nuclear weapons, and at the same time supports nonproliferation by removing a concern that could drive the development of new enrichment facilities.

Another example of the beneficial alignment of business and nonproliferation interests can be seen in the new enrichment facilities being constructed in the United States by URENCO and Areva. In both cases, contracts and treaties will limit the visibility of U.S. operators into the specifics of the centrifuge technologies being installed in the plant. These so-called “black boxes” have the twin effect of 1) preventing the spread of sensitive dual-use technology, and 2) preserving the intellectual property contained in the centrifuges themselves. This is a win for nonproliferation and a win for business.

Early information of the new fuel cycle facilities being built in China provides yet another model of combining business benefit with proliferation risk reduction. It appears that the new plant will represent an integrated process that matches spent fuel input to MOX fuel fabrication output. This approach will avoid the accumulations of plutonium that have plagued other reprocessing plants and improve the operating efficiency of the combined facility. The automated process will also minimize hands-on operations by employees, which improves worker safety but also limits opportunities for theft. This new fuel cycle complex could be a model of business and nonproliferation interests reinforcing each other for outcomes that benefit both.

These examples show that business and nonproliferation goals need not compete with each other. Security measures can enhance the bottom line instead of draining it. Governments and industry need to work together to find additional ways in which good nonproliferation outcomes go hand in hand with good business outcomes.

One place to start in this joint effort is to consider the “wish list” for each piece of this puzzle. From a nonproliferation and nuclear security perspective, there are several key goals:

- Prevent the misuse of nuclear materials or facilities for weapons purposes
- Secure HEU and separated Pu as if they are the weapons they could become
- Phase out production/transport/use of HEU and separated Pu in the commercial sector
- Reduce stocks of weapons-usable material
- Limit spread of enrichment and reprocessing technologies

If these are looked at in isolation, they can seem to create limits or burdens on the expansionist, profit-driven nature of the nuclear industry. Industry has often looked at these goals as either a cost to be shifted to government, or policies to be opposed or undermined. But we have seen, from the examples above, that this doesn't always have to be the case.

The nuclear industry has its own wish list:

- Durable solutions for used nuclear fuel
- Reliable supplies of materials and financing
- Stable legal and regulatory environment
- Reasonable return on investment
- Government support (exports, loan guarantees, policies)
- Level playing field with other energy sources

We should be looking for ways to examine these two sets of goals to develop tools that bring them together. Governments have some tools at their disposal that can help shape the business environment towards the kind of “virtuous circles” that will benefit both sides of the nuclear coin:

- Loan guarantees and other financing arrangements
- Opportunities for international cooperation
- Government purchasing power
- Taxes and tariffs
- Technology substitution (e.g., Mo-99 production using accelerators)
- Trade advocacy

Business and other non-government actors have tools at their disposal as well.

- Sharing of best practices (e.g., World Institute for Nuclear Security)
- Codes of conduct
- Industry-based nuclear security standards & certifications (e.g., ISO-type standards)
- Insurance premiums based on security risk management

I hope that during this meeting and in the discussions we will engage in as we return to our home institutions and day jobs we can keep this concept in mind, and spend some of our intellectual effort, each from our own perspective, to see what we can do to create this alignment of nuclear interests. If security is in tension with profits, we will continue to be at risk from the kind of nonproliferation failures we have seen in the AQ Khan network, or from the potential for theft, diversion and misuse of nuclear materials by states or terrorists. The most durable nuclear system is one that makes nonproliferation good for business, and business good for nonproliferation. In this kind of virtuous circle, the good guys always win.