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WSSX – A Joint U.S.-Russian Nuclear Counter-Terrorism Exchange

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Abstract:

In 1994, the U.S. and Russian Federation governments formally agreed to exchange information on the safety and security of nuclear weapons. This agreement included three major elements, called Technical Working Groups (TWGs). TWG C deals with counter-terrorism. Its four assigned actions and U.S./Russian experience are reviewed in this paper.

Although active exchange programs were created under TWGs A and B, involving workshops and laboratory-to-laboratory development projects, little work was initiated in TWG C, due to the sensitive nature of this information. After 9/11, however, it became clear that much could be gained by having each country share information to help solve the problem of nuclear proliferation among terrorist groups. Government-to-government meetings have reaffirmed the initial agreement to exchange information on this topic, and a number of joint project proposals are now under discussion.

The Joint Steering Committee that oversees this exchange has approved approximately 20 projects. They include such topics as terrorist threat scenario development, detection of nuclear material and explosives in transportation containers, analysis of material mass and configuration, and consequence mitigation. It is expected that the joint development of these capabilities will enhance our ability to respond to a nuclear threat and to facilitate mutual assistance, should either party experience a nuclear terrorist event.

Introduction:

The *Agreement between the Government of the United States of America and the Government of the Russian Federation on the Exchange of Technical Information in the Field of Nuclear Warhead Safety and Security*, commonly called the U.S.-Russian Warhead Safety and Security Exchange Agreement (WSSX), was signed in December 1994 and entered into force in June 1995. Participants in the Agreement are the Department of Energy and the Department of Defense for the United States and MinAtom and the Ministry of Defense for the Russians. The Agreement provides for the exchange of unclassified information only and is managed by a Joint Steering Committee (JSC) made up of representatives from the principal parties, with participation from the nuclear weapons laboratories on each side. The JSC establishes priorities and approves functional areas for discussion.

A Joint Coordinating Group (JCG) conducts day-to-day activities and is made up of technical representatives from the weapons laboratories. The JCG meets at least twice a year to review projects, summarize their status, and identify potential areas of concern. Efforts are divided into three Technical Working Groups: A, B, and C. Working Group A addresses safety and security of nuclear warheads during the dismantlement process. Working Group B addresses safety and security and the physical protection of nuclear warheads and their components through external means. Working Group C addresses the technical assessment of open-source materials dealing with the design of nuclear warheads.

Technical Working Group C:

Each working group has a set of topics expressly approved for discussion. There are four in TWG C:

1. Develop guidance for the exchange of technical information under this agreement, based upon the rules of both countries for restriction of information. Both countries will exchange drafts based upon their internal rules for classification of information. A meeting will subsequently be held to combine these drafts into a single document for future guidance.

2. Jointly develop a list of potential nuclear proliferant states, based upon their economic, scientific and technical capabilities. When this list has been compiled, the Technical Working Group will consider the probability of such countries developing nuclear weapons and their expected parameters and will assess the likely level of threat.

3. Define indicators that could provide evidence of nuclear weapons development and categorize those indicators with regard to priority and information content.

4. Exchange information on technical means for responding to a nuclear threat, including analysis of the threat and the technology to defeat the threat.

The development of guidelines for the exchange of information (directive number1) was the first order of business under the Agreement. All information exchanged (papers, presentations, demonstrations, etc.) must be reviewed by the originating country's security, classification and export-control officials, then by the sponsoring government

agency and the JSC. Once these guidelines were established, the other two TWGs proceeded to conduct active exchange programs involving workshops on topics of interest, technology demonstrations, and the development of contracts for R&D to resolve mutual problems. The remainder of the directives in TWG C were, however, considered too sensitive to proceed with, and, until September 11, 2001, no proposals for joint development were discussed.

Following the attacks of September 11, a new sense of urgency and cooperation emerged in the nuclear counter terrorism area. TWG C became the focal point for joint discussions between the United States and Russia in this area, and since 9/11 nearly 100 proposals have been discussed and evaluated under the WSSX agreement.

Project proposals are developed from joint discussions of needs. The initial proposal is often very general in nature and then is modified by the receiving country to meet specific objectives or operational shortfalls. The Joint Steering Committee must approve the project, after which negotiations can begin to develop any needed contracts, timelines, funding, deliverables, etc. Once work is initiated, the Joint Coordinating Group tracks performance through quarterly reporting and semiannual meetings.

Proposed Projects:

Nuclear counter-terrorism involves a broad range of technical fields. It starts with the development of scenarios bracketing the possible range of threats, followed by the development of intelligence and indicators that could give warning that those scenarios are being implemented. If a threat is determined or communicated, there is a need to

assess the creditability of that threat. If the threat is determined to be credible, there may have to be a search for the device - a formidable technical challenge. If a nuclear threat device is found, there is the task of determining how it works, possible render safe actions, and the consequences of safing or failure-to-safe. If a device is safed, there are the jobs of dismantlement and disposal of the nuclear material and any explosives. At any point, the process may fail – either to discover the threat before it is enacted or to safe the device before it goes off. Consequence management is therefore necessary from the start, and consequence mitigation is necessary if things go bad. Following the immediate emergency, there will be a need to attribute the action to an individual, group, or country. Forensics following a nuclear blast will be very different from forensics following a conventional bombing.

Joint proposals currently under way, or in process of negotiation, cover nearly all the areas of nuclear counter-terrorism. Currently, joint tasks are being conducted to develop a DT neutron generator for the detection of special nuclear material and to conduct active neutron interrogation for nuclear materials in luggage. Other projects are under way to measure highly enriched uranium and explosives in transportation containers.

Proposed projects under negotiation and expected to be funded include the following:

Aerosol dispersion mitigation

Hypothetical terrorist scenarios

High explosives (HE) detection, mass & type

HE detection in cargo scanner systems

Fissile material detection, mass & type

Effects of a nuclear terrorist event in a large city

Mutual U.S./R.F. support for responding to a nuclear threat

Expected Outcomes:

We are already seeing new approaches to problem solving and proposals for an expanded technology base for nuclear safety and security, including specific hardware. Contracts have been developed for the manufacture of large plastic detectors to aid in search efforts and radiation measurements have been funded to assess highly enriched uranium parameters for detector development. Work is proceeding to build and test a prototype system to detect fissile materials in cargo containers using active neutron interrogation in addition to U.S. efforts at passive detection and x-ray examination.

Technical exchanges between U.S. and Russian scientists have been frank and constructive in the Technical Working Group areas of nuclear weapons safety and security. Now that the need for cooperation in nuclear counter-terrorism has become evident, we expect a similar working relationship. Such exchanges should bring about expanded scenarios and added insight into Russian views of terrorism, as well as the development of improved instrumentation. Greater interaction should also bring about increased cooperation in times of crisis and the establishment of better lines of communication.

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