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The Cooperative Monitoring Center

Achieving Cooperative Security Objectives Through Technical Collaborations

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Introduction

The post cold war security environment poses both difficult challenges and encouraging opportunities. Some of the most difficult challenges are related to regional conflict and the proliferation of weapons of mass destruction. Some of the most encouraging opportunities derive from new efforts to establish regional dialogue and confidence-building-measures designed to reduce the likelihood of conflict.

New and innovative approaches to prevent the proliferation of weapons of mass destruction are essential. More effort must be focused on underlying factors that motivate countries to seek weapons of mass destruction. Historically the emphasis has been on denial: denying information, denying technology, and denying materials necessary to build such weapons. Though still important, those efforts are increasingly perceived to be insufficient, and initiatives that address underlying motivational factors are needed.

On the opportunity side, efforts to establish regional dialogue and confidence-building measures are increasing in many areas. Such efforts can result in cooperative agreements on security issues such as border control, demilitarized zones, weapons delivery systems, weapons of mass destruction free zones, environmental agreements, and resource sharing. In some cases, implementing such cooperative agreements will mean acquiring, analyzing, and sharing large quantities of data and sensitive information. These

arrangements for "cooperative monitoring" are becoming increasingly important to the security of individual countries, regions, and international institutions. However, many countries lack sufficient technical and institutional infrastructure to take full advantage of these opportunities.

Where successful strategies for regional cooperation are implemented, underlying motivations for proliferation may be reduced. Constructing a peaceful twenty-first century will require that we bring technology to bear in the most productive and innovative ways to meet the challenges of proliferation and to maximize the opportunities for cooperation.

Applications for Cooperative Monitoring

Arms control initiatives can be an important element of a regional security process. There are many potential topics for arms control agreements: nuclear weapons, weapons delivery systems, chemical and biological weapons, and conventional weapons. Cooperative monitoring technology can play a key role in implementing arms control agreements, providing assurance to all parties that agreements are being complied with.

Cooperative monitoring can also contribute to the resolution of nontraditional security challenges. For example, monitoring technology is essential to characterizing and monitoring agreements on the distribution of natural resources or on environmental pollution. Monitoring is also an important component of efforts to open borders to international trade and to stop illicit activities, such as smuggling and illegal immigration.

Regional Participation Is Needed

Active participation of key regional states is essential to meeting the challenges of proliferation and building opportunities for cooperation. To encourage constructive security arrangements, states and regions need their own institutional and technical infrastructure to evaluate and implement cooperative agreements. Without investing in implementation, agreements easily can be reversed.

Education and training of regional experts and policy makers is essential to establishing an indigenous capability for implementing security agreements. Such education must treat both the philosophical and technical aspects of arms control and other security arrangements.

The United States and Europe sometimes forget the decades of experience that have been accumulated negotiating and implementing arms control agreements. Over the years a substantial institutional and technical framework for arms control has been developed that includes governmental institutions such as the U.S. Arms Control and Disarmament Agency and the On-Site Inspection Agency; academic institutions that helped establish the logic of including arms control as an element of national security policy; and technical laboratories that develop the technologies for verification of arms control agreements.

The Cooperative Monitoring Center

The Cooperative Monitoring Center (CMC) at Sandia National Laboratories in Albuquerque, New Mexico, was established by the Office of Nonproliferation and National

Security in the US Department of Energy in July 1994 to help develop regional technical capabilities. The CMC assists political and technical experts from around the world to acquire the technology-based tools they need to design, analyze, and implement nonproliferation, arms control and other security measures.

In addition to responsibilities for developing nuclear weapons, the DOE and its national laboratories have been involved in developing verification technologies and providing technical expertise to the United States Government on arms control and nonproliferation since the first nuclear arms control agreements. The CMC leverages these long-standing technology programs into new cooperative applications. It makes these technologies, and the technical expertise of the DOE national laboratories, accessible to a wide spectrum of US and international and regional organizations.

The CMC promotes the development of the technical and scientific infrastructure for arms control around the world through visiting scholars programs, by conducting workshops to explore how technology can facilitate solutions to specific regional problems, and by providing assistance to on-going international negotiations and discussions. The CMC also supports international collaborations on the use of technology to enhance the effectiveness of transparency and confidence building measures.

Workshop participants receive hands-on experience with monitoring hardware, software, and data processing capabilities for a wide range of applications.

International collaborations and experiments on the use of technology to enhance the effectiveness of transparency and confidence building measures allow parties to think through monitoring options in a non-threatening environment.

Services are provided to the US government and to international and regional organizations. Partners include US and foreign research institutes, other national laboratories, and private industry. Expanding the number of our users and collaborators is a major goal.

What is Cooperative Monitoring?

Cooperative monitoring is the obtaining and sharing of agreed information among parties. It can incorporate a wide range of options for sharing information. Examples include treaty verification systems, confidence-building measures, and international environmental monitoring. It compliments, but does not replace, national technical capabilities. Cooperative monitoring can take place between two countries or between groups of regional states, or among the wider international community. It can be a function of bilateral or multilateral agreements, and in some cases cooperative exchanges of information can occur between nongovernmental groups such as scientific organizations or environmental groups. The only requirements are that two or more parties agree to exchange and share information. Technology can provide options for the level and type of cooperative monitoring that is agreed to by the participating parties.

Cooperative monitoring can be thought of as a spectrum of options. The low end of the spectrum might include very limited exchanges of information such as: declarations of intended activities, exchanges information about weapons purchases, limited remote sensing, such as

monitoring zones of reduced military activity, and other such nonintrusive exchanges. The high end of the monitoring spectrum might include a variety of technologies and more intrusive procedures for rigorous verification, such as on-site inspections, remote monitoring of key facilities and activities such as missile testing, and detailed exchange of sensitive information.

One of the most common misconceptions about cooperative monitoring is that if countries cannot reach an agreement that provides very high levels of transparency and assurance, then monitoring is not an option. In fact, most cooperative monitoring starts at the low end of the spectrum and progresses only as confidence is gained and political environments evolve to levels that support more intrusive and more comprehensive monitoring.

The CMC Demonstrates a Range of Monitoring Technologies and Systems

The CMC demonstrates numerous monitoring technologies. These include ground sensors for detection and assessment, satellite and aerial image analysis, and data security and access control technologies. Simulations are used to educate workshop participants about the way such sensors can be used effectively in applications of interest to them. All technologies are both unclassified and exportable, and therefore available to all workshop participants.

The CMC also provides a working laboratory for ongoing monitoring experiments. For example, the CMC collects monitoring data from nuclear facilities worldwide as part of an experiment to demonstrate the role remote monitoring can play in providing efficient transparency to civilian nuclear activities. It also demonstrates monitoring systems that provide transparency for components from dismantled nuclear weapons at the PANTEX facility.

A bilateral agreement between the Kurchatov laboratory in Moscow and the Argonne West laboratory in Idaho is another example of a cooperative monitoring experiment. Under this agreement, the two laboratories are exchanging data on stored excess fissile material. Data is collected at the two nuclear facilities and also at the CMC. Experiments such as this help countries devise acceptable transparency measures that provide assurance that nuclear material is receiving adequate protection.

Workshops

The CMC has conducted cooperative monitoring workshops for groups from the Middle East, Northeast Asia, South Asia, China and the Former Soviet Union. Recent workshops include a verification training course for the Israeli delegation to the Arms Control and Regional Security (ACRS) process and a workshop for representatives from Egypt, Jordan and Israel to discuss monitoring options for a Middle East weapons of mass destruction free zone.

Workshops, coupled with regional travel and participation in events sponsored by other organizations, have led to a number of other potential collaborations between the CMC and regional researchers. Some possibilities include establishing monitoring testbeds to evaluate technologies for applications such as monitoring demilitarized zones or nuclear reactors.

Looking to the Future

A few key lessons have been learned as a result of regional interactions that will guide future work at the CMC. First, regional problems require regional solutions. Although the

US/USSR experience can provide valuable lessons, each region is unique and will need to develop its own logic for confidence building and arms control. In some cases, regional verification may be needed to supplement international or global monitoring regimes to reflect region-specific concerns.

Second, education and training are critical for constructive regional participation. Many countries lack the institutional framework to train experts for participation in international negotiations. Experts from all participating countries need sufficient knowledge to feel confident in a negotiating forum. Asymmetries in regional technical expertise may be as important as geographical asymmetries.

Third, agreements on weapons of mass destruction may be the last step in a regional security process. Issues such as conventional arms and delivery systems, which also pose a threat, are of great interest. Discussions on nontraditional security challenges, such as resources and the environment, may also offer opportunities to engage parties constructively.

Fourth, collaborative technical experiments provide opportunities to investigate a range of monitoring options in non-threatening environments. Such experiments prepare the technical communities to evaluate and implement agreements in a timely manner when they become a reality. Such collaborations also help establish a regional constituency for arms control and nonproliferation.

In the future, the CMC will endeavor to expand ties with regional and U.S. organizations to assist in the effort to develop an infrastructure for implementing security agreements worldwide.