



International Security News

International Security Programs
Dori Ellis, Director

Focus on Homeland Security and Combating Terrorism

From the Director

With this issue of the International Security News, we pause to remember the horrifying events of September 11, 2001, and the thousands of lives that were lost as a result of the terrorist aircraft hijackings and the subsequent attacks on the World Trade Center and the Pentagon. These attacks on US soil focused the nation's attention on our vulnerability and the need for improved security within US borders. These attacks also led to a US declaration of war on terrorism, a war that is global in scope, thus requiring strategic alliances around the world:

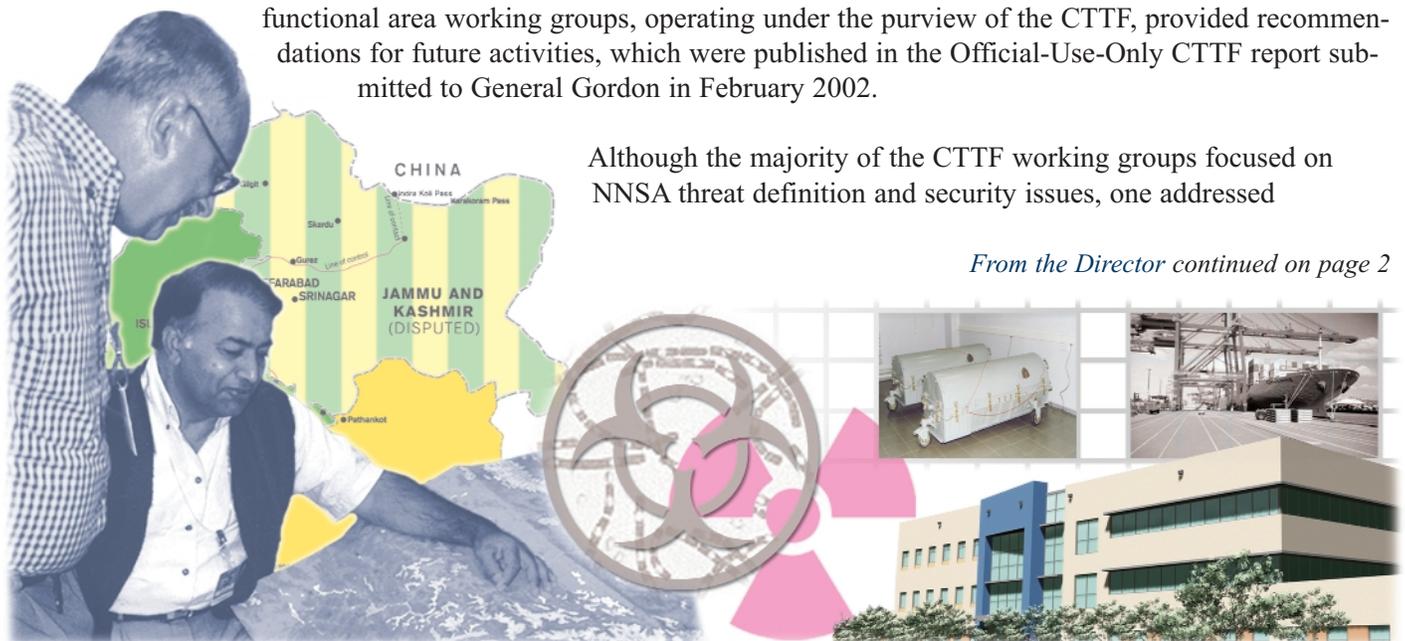
"America and our friends and allies join with all those who want peace and security in the world, and we stand together to win the war against terrorism...This is a day when all Americans from every walk of life unite in our resolve for justice and peace. America has stood down enemies before, and we will do so this time. None of us will ever forget this day. Yet, we go forward to defend freedom and all that is good and just in our world."

President Bush, *Address to the Nation*, September 11, 2001

DOE/NNSA Activities In the days immediately following September 11, the Department of Energy (DOE)/ National Nuclear Security Administration (NNSA) responded by performing a rapid review of security at NNSA sites and for transportation of nuclear material and by creating the Combating Terrorism Task Force (CTTF). The CTTF was headed by Sandia's Bill Knauf, National Security and Arms Control Division 5000, who was on special assignment to General John Gordon (retired), then Administrator of NNSA. Twelve technical and functional area working groups, operating under the purview of the CTTF, provided recommendations for future activities, which were published in the Official-Use-Only CTTF report submitted to General Gordon in February 2002.

Although the majority of the CTTF working groups focused on NNSA threat definition and security issues, one addressed

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international programs and two focused on DOE/NNSA capabilities. The International Security Programs supported the NNSA Contributions to Combating Terrorism Working Group, primarily by developing a searchable Access database of DOE/NNSA laboratory and site capabilities available to combat terrorism. (See “*Catalog of DOE/NNSA Capabilities to Combat Terrorism*,” page 12.)

In response to the CTF report, General Gordon requested a thirty-day study in spring 2002 to determine the technical leadership NNSA provides to the US government to counter the threat of weapons of mass destruction (WMD). On May 1, 2002, Maureen McCarthy, Gordon’s Chief Science Advisor, published the report on the thirty-day study: *Protecting the Homeland: NNSA/DOE Weapons of Mass Destruction; Counterterrorism and Homeland Security; Science, Technology, and Operations*. (See “NNSA Study on Combating Terrorism,” page 13.) McCarthy is currently the member of the Department of Homeland Security Transition Team representing DOE/NNSA. Holly Dockery, Manager of MPC&A Programs 5350, along with Sandians John Cummings, Jr., 1010, and John Vitko, Jr., 8100, is on temporary assignment to support transition planning.

Science and Technology Contributions of Sandia National Laboratories In the days following the events of September 11, an urgent need surfaced for technology solutions readily available for response and recovery as well as for protection against additional attacks. As an example, the sudden appearance of anthrax at the offices of the Sun tabloid in Boca Raton, Florida, at the NBC news headquarters in New York, in the Hart Senate building in Washington, DC, and in other Senate mail further emphasized the need for technology to prevent and mitigate potential nuclear/radiological, biological, and chemical threats. Sandia National Laboratories was poised to meet these challenges, in great part due to our own strategic planning and the foresight of our sponsors to invest resources toward emerging threats to the nation. (See “Sandia’s Contributions to Homeland Security and the War against Terrorism,” page 5.)

The Role of International Security Programs (ISP) in Homeland Security The ISP has not played an overt role in what has now been named homeland security; however, its role is essential in reducing the international WMD terrorist threat to the homeland. The figure on page 3 provides a context for homeland security and international security.

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The majority of programs in the ISP have two primary objectives: 1) reduce the proliferation risk posed by states' and terrorists' acquiring WMD and WMD material, technology, and expertise and 2) reduce the motivation to acquire and use WMD by enhancing regional stability in parts of the world critical to US national security and expanding US alliances abroad through technical cooperation. The impact on homeland security of programs focused on the first objective is clearer in that these programs, if effective, limit the terrorists' capabilities to initiate a WMD attack on US soil. The contribution to homeland security of programs with the second objective is less obvious and more difficult to evaluate in that these programs, if effective, should encourage international cooperation to fight terrorism and may even reduce some of the motivation for terrorism or for a state to support terrorist activities.

The ISP participates in a number of programs that limit terrorists' capabilities, for example the US/Russian Federation (RF) Material Protection, Control, and Accountability (MPC&A) program; the Second Line of Defense (SLD) program; the Warhead Safety and Security Exchange; the International Science and Technology Centers; the Russian Transition Initiative, which comprises the former Nuclear Cities Initiative and Initiatives for Proliferation Prevention programs; and international physical security activities. (See "International Physical Protection" and "International Training Course for Physical Protection," page 14.) Holly Dockery provides a report of the results of the US/RF Counterterrorism Workshop hosted by the All-Russia Scientific Research Institute of Automatics (VNIIA) in Moscow in June. (See "VNIIA Hosts US-Russia Counterterrorism Workshop," page 10.)

All the programs mentioned above, with the exception of SLD, are not generally considered to be directly related to homeland security. The SLD program has evolved from a focus on Russian ports of entry and exit to ports

in other former Soviet Union (FSU) countries. The SLD program, consistent with its focus outside the contiguous US (OCONUS), also is supporting the US Customs Service Container Security Initiative by surveying and equipping foreign megaports with radiation detection equipment to prescreen container cargo bound for the US. (See "Second Line of Defense," page 9.)

The ISP's Regional Security Program concentrates on projects in four regions: East Asia, the Middle East, Central Asia, and South Asia. The program encourages international technical cooperation to promote regional stability and to fight terrorism. (See "CMC Regional Security Programs," page 16.)



The ISP also supports other Sandia programs, e.g., SNL California's Biodefense Program and the NNSA NA-22-funded Proliferation Detection/Nuclear Smuggling Program, and their contributions to homeland security. The ISP's Rapid Syndrome Validation Project (RSVP) system – a Web-based early warning, biosyndrome system – can be deployed to identify biological attacks based on an assessment of various syndromes. This program contributes to homeland security in a more immediate, event-driven capacity than

other ISP programs. A related effort, also part of Sandia's biodefense and domestic physical security programs, included the biosecurity activities funded primarily by the US Department of Agriculture (USDA) soon after September 11. (See "Center 5300 Contributes to Biodefense," page 15.)

Creation of the Department of Homeland Security In the wake of President Bush's proposed creation of the Department of Homeland Security (DHS), various widely differing views of what homeland security encompasses have emerged, and consequently, of what the impact

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might be on Sandia and on the ISP following the creation of the DHS. (See "Sandians Testify on President Bush's Proposed Department of Homeland Security," page 7.) At the federal level, President Bush's June 6, 2002, proposal to create a permanent cabinet-level Department of Homeland Security will encompass as many as a hundred government agencies in order to work more closely and effectively for improving homeland security. No formal connections exist between the current Office of Homeland Security and the activities of the national laboratories; however, various proposals indicate an elevated role for science and technology development in the future DHS. (See "The Role of R&D in the Planned DHS: Comparing the House and Senate Proposals," page 8.)

Conclusion Whereas the nation's homeland security effort is currently focused on more responsive and predictive capabilities to homeland events, i.e., protection against and detection of attacks, consequence management following a successful attack, and attribution and military response to the attack, the ISP primarily focuses on reducing terrorist threat capabilities by keeping WMD and WMD materials, technologies, and expertise out of the hands of terrorists. The ISP also focuses on international technical cooperation to enhance regional stability in areas critical to US national security and to combat terrorism internationally. Second Line of Defense more directly addresses homeland security as well as international security by reducing nuclear smuggling at international ports of entry.

Dori

International Programs Building Open for Business

During the month of August 2002, International Security Center 5300 moved into its new International Programs Building (IPB) at Sandia Science and Technology Park in Albuquerque, New Mexico. A contingent of 150 personnel are enjoying the synergy of working in the same location. The 65,000-square-foot building accommodates the Cooperative Monitoring Center and the US/Russia Nuclear Security, International Safeguards and Security, Regional Security, Arms Reduction Support, and Defense Nuclear Materials Stewardship programs in addition to a variety of new international security initiatives. The IPB will provide a neutral place for the US Departments of State and Defense and the Department of Energy/National Nuclear Security Administration to meet with policy and military experts of foreign governments on aspects of nonproliferation, arms control, and other security issues. Ribbon-cutting at the building was held September 24, 2002.



T.J. Allard Leads Sandia's Homeland Security/Combating Terrorism Coordinating Office



T.J. Allard 12100 has left his executive staff position to lead Sandia's Homeland Security/Combating Terrorism Coordinating Office. He succeeds Dave Nokes, who has recently been promoted to Vice President of the National Security and Arms Control Division 5000. The role T.J. is assuming has been expanded so that T.J. will also be the Sandia point of contact for the White House's Department of Homeland Security (DHS) Transition Team. In this role he will link Sandia's topical experts with the information needs of the DHS Transition Team. Sandia is committed to provide the best technical advice possible to the government during this critical transition period. In the long term, the organization will be structured to be responsive to the needs of the new department. Source: T.J. Allard 12100, MS 0103, 505-844-5581, fax 505-284-3452, tjallar@sandia.gov



Sandia's Contributions to Homeland Security and the War against Terrorism

C. Paul Robinson
Director of Sandia National Laboratories

Excerpts from statements to the United States Senate Committee on Energy and Natural Resources and the United States House of Representatives Armed Services Committee, Subcommittee on Military Procurement



Like most Americans, the people of Sandia National Laboratories responded to the atrocities of September 11, 2001, with newfound resolve on both a personal and professional level. As a result of our own strategic planning and the foresight of sponsors to invest resources

toward emerging threats, Sandia was in a position to immediately address some urgent needs.

For example, by September 15, a small Sandia team had instrumented the K-9 rescue units at the World Trade Center site to allow the search dogs to enter spaces inaccessible to humans, while transmitting live video and audio to their handlers. This relatively low-tech but timely adaptation was possible because of previous work we had done for the National Institute of Justice on instrumenting K-9 units for SWAT situations.

You may perhaps be aware that a formulation developed by Sandia chemists was one of the processes used to help eliminate anthrax in this very building (Dirksen), as well as in the Hart and Ford buildings here on Capitol Hill and at contaminated sites in New York City and in the Postal Service. We developed the non-toxic formulation as a foam several years ago and licensed it to two firms for industrial production in 2000. The formulation neutralizes both chemical and biological agents in minutes.

Special devices invented by explosives experts at Sandia have proved to be effective for safely disarming several types of terrorist bombs. For the past several years, our experts have conducted training for police bomb squads around the country in the techniques for using these devices for safe bomb disablement. The shoe bombs that Richard Reid allegedly attempted to detonate onboard a trans-Atlantic flight from Paris to Miami were

surgically disabled with an advanced bomb-squad tool originally developed at Sandia. That device, which we licensed to industry, has become the primary tool used by bomb squads nationwide to remotely disable hand-made terrorist bombs while preserving them for forensic analysis.

Detecting explosives in vehicles is a major concern at airports, military bases, government facilities, and border crossings. We have developed and successfully tested a prototype vehicle portal that detects minute amounts of common explosives. The system uses a Sandia-patented sample-collection and preconcentrator technology that has previously been licensed to industry for use in screening airline passengers for trace amounts of explosives. The Technical Support Working Group and DOE's Office of Safeguards and Security funded this research.

Sandia is a partner with Argonne National Laboratory in the PROTECT (Program for Response Options and Technology Enhancements for Chemical/Biological Terrorism) program, jointly funded by DOE and the Department of Justice. PROTECT's goal is to demonstrate systems to protect against chemical attacks in public facilities, such as subway stations and airports. For more than a year, a Sandia-designed chemical detector test bed has been operating in the Washington, DC, Metro. The system can rapidly detect chemical agents and transmit readings to an emergency management information system. We successfully completed a demonstration of the PROTECT system at a single station on the Washington Metro. The program has since been funded to accelerate deployment in multiple Metro stations. DOE has also been requested to implement a PROTECT system for the Metropolitan Boston Transit Authority.

Sandia's Contributions continued on page 6

Another major worry for homeland security is the potential for acts of sabotage against municipal water supplies. In cooperation with the American Water Works Association Research Foundation and the Environmental Protection Agency, Sandia developed a security risk assessment methodology for city water utilities. This tool has been employed to evaluate security and mitigate risks at several large water utilities. We have used similar methodologies to evaluate risks for other critical infrastructures such as nuclear power-generation plants, chemical storage sites, and dams.

As a result of our sustained program of research and development on Synthetic Aperture Radar (SAR), several state-of-the-art systems have recently been provided to various DOD operational units, either through Sandia directly or by a corporate partner. These systems are deployed in various critical and time-urgent national security missions, including direct support of Joint Forge, Enduring Freedom, and homeland defense activities, and they have earned recognition for their exceptional performance and utility. Unlike more conventional electro-optical systems, SAR provides a day/night, all-weather imaging capability. Sandia has performed research and development on SARs since the early 1980s, an activity that grew from roots in nuclear weapon radar fuzing and has continued under the sponsorship of both DOE and DOD and some corporate partners.

These and other contributions to homeland security and the war against terror are possible because of strategic planning we conducted years ago and early investment in the capabilities that were needed to respond to emerging threats. The outstanding technology base supported

by NNSA for its core missions is the primary source of this capability. We also made strategic decisions to invest Laboratory-Directed Research and Development (LDRD) funds in the very things that we judged were likely to become future needs: items to the Afghanistan theater, the decontamination foam, the sensors we have deployed, and special-purpose robotics we developed. In recent months, requests for Sandia's services from federal agencies other than DOE for work in emerging areas of need have increased. Approximately twenty-eight percent of our total laboratory operating budget is now provided by federal agencies other than DOE.

Sandia possesses strong competencies in nuclear, chemical, and biological sensors and engineered systems suitable for transfer to industry and deployment in homeland security applications. We have been proactive in supporting our nation's first responders and addressing the challenges of infrastructure protection. We have a track record of anticipating emerging homeland security threats and investing in technology development to counter them through our Laboratory-Directed Research and Development (LDRD) program and sponsor-directed programs. We are the premier national laboratory for working with industry to transition technologies into deployable commercial applications.

On behalf of the dedicated and talented people who constitute Sandia National Laboratories, I want to emphasize our commitment to strengthening United States security and combating the threat to our homeland from terrorism and weapons of mass destruction. It is our highest goal to be a national laboratory that delivers technology solutions to the most challenging problems that threaten peace and freedom.

Ambassador Robinson served as Chief Arms Control Negotiator from 1988 through 1990 and headed the US Delegation to the Nuclear Testing Talks in Geneva. Robinson spent most of his early career at Los Alamos National Laboratory, where he led the laboratory's defense programs. He is a longstanding member of the Strategic Advisory Group for the Commander-in-Chief, US Strategic Command. Robinson has served on DOD's Threat Reduction Advisory Committee since 1998. He was Chair of the Presidential Technical Advisory Group on Verification of Warhead Dismantlement and Special Nuclear Materials Controls. He previously served on the Scientific Advisory Group on Effects for the Defense Nuclear Agency and on Defense Science Board studies and has advised other government agencies.

Sandians Testify on President Bush's Proposed Department of Homeland Security



On June 6, 2002, President George W. Bush proposed a permanent Cabinet-level Department of Homeland Security (DHS) to encompass as many as a hundred government agencies that have responsibilities for various aspects of security in the United States. The new department will bring together essential agencies to enable them to work more closely with each other and to provide a means of final accountability for homeland security tasks. A single, unified homeland security structure is expected to improve protection against today's threats and to be flexible enough to help meet the unknown threats of the future.

A number of homeland security organizational proposals originating from outside studies, commissions, and members of Congress were considered in designing the new department. According to President Bush, the DHS will perform four primary tasks: 1) control our borders and prevent terrorists and explosives from entering the US; 2) work with state and local authorities to respond quickly and effectively to emergencies; 3) engage our best scientists to develop technologies that detect biological, chemical, and nuclear weapons and to discover the drugs and treatments to best protect our citizens; and 4) review intelligence and law enforcement information from all agencies of government to produce analyses of threats against the US and to develop plans to counter those threats.

The proposal for a DHS originally called for establishment of a single premier laboratory to act as headquarters for addressing the technological aspects of countering chemical, biological, radiological, and nuclear terrorism. In testimony before Congress, Paul Robinson, Director of Sandia National Laboratories, and Dave Nokes, Vice President of Sandia's National Security and Arms Control Division, made the case for calling on Sandia and all the NNSA national laboratories for this aspect of homeland security.

Robinson and Nokes both noted that the NNSA laboratories constitute a broad, multidisciplinary technology base in nearly all the physical sciences and engineering disciplines. Robinson recommends using the existing labs rather than taking time to create a new one, indicating the war on terrorism requires bringing technology to bear as rapidly as possible with no luxury of time to

organize, build, or bring a new lab into successful operation. Creating mission-focused research and development programs is essential, according to Robinson, who also recommends that the laboratories and US manufacturers work together closely to speed up products to the users in the field.



Dave Nokes, Vice President National Security and Arms Control Division 5000, testified before Congress on the proposed Department of Homeland Security.

The Sandians noted that the labs are eager to leverage their capabilities to support national security needs, including homeland security. Both Robinson and Nokes described areas of expertise at Sandia that are directly applicable to the homeland security mission. Categories discussed include nuclear sensing to reduce the vulnerability to nuclear terrorism through detection, identification, and interdiction of nuclear materials; sensing to counter the threat posed by chemical and biological agents; explosives detection for use at ports of entry;

bomb disablement technology and training for first responders; critical infrastructure protection using the labs' extensive supercomputer resources and software expertise; and technologies for protection of cyber and network resources and the information residing on such systems. Sandia also contributes volunteer team members for nuclear incident response from among its full-time weapon scientists, engineers, and technicians.

Compromise language has subsequently been added to the homeland security bill in the House of Representatives to allow government-owned national laboratories to compete to become the headquarters lab for the new Homeland Security Department. Under the House bill, the department may establish a headquarters lab but does not have to do so. The House bill also includes functions that were not in the administration's draft, such as an undersecretary for science and technology who will oversee the new department's research and

Sandians Testify continued on page 18

The Role of R&D in the Planned DHS: Comparing the House and Senate Proposals

The Bush Administration's June proposal for the Department of Homeland Security (DHS) recommended collecting a massive number of federal programs into one new department. After a broad base of protest from Congress as well as from various science and technology organizations, the White House dropped some of its most controversial ideas from the formal plan presented to Congress in July. The intentions of both the White House and Congress were to complete DHS legislation by September 11, but numerous competing views have delayed passage until later this year.

As of the August recess, both the House and Senate bills shun the idea of the new department creating its own centralized laboratory. Originally, the administration had proposed transferring Lawrence Livermore National Laboratory (LLNL) into the DHS as its lead research and development (R&D) laboratory. New Mexico politicians, in particular, criticized this concept, and both bills now require the department to give other laboratories, e.g., Sandia and Los Alamos National Laboratories, a chance to lead R&D projects.

For a comparison of the House and Senate bills, see the table above, which accompanied an article in the August 9 issue of *Science* magazine: "Congress Homes In on New Department's R&D Programs." According to the *Science* article, the current House and Senate Bills indicate an elevated role for science and technology development in the future DHS. For example, the Senate's early August 2002 version of the department would create "...a \$200-million research agency designed to spur antiterrorism technologies." The House bill, approved on July 26, "...would establish the Homeland Security Institute and several university- and government-based research centers, although it doesn't set specific spending targets."

The House and Senate bills agree on several important issues regarding competitive R&D. Both bills call for using merit-based competition to award grants and encourage DHS to keep the research and the results unclassified. Both bills would name a science czar to oversee the department's R&D portfolio and would require the creation of external advisory groups to provide outside-in perspectives on the research activities. The czar position would help ensure that science and technology is an important component in policy decisions. The Senate bill calls for the establishment of a \$200-million Security Advanced Research Projects Agency (SARPA, modeled after the DOD's DARPA) in

order to encourage the acceleration of specific technologies.

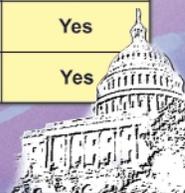
The two proposals differ, however, on the regulation of bioterror research. The Senate bill gives the DHS the responsibility to establish bioterror funding priorities because it sees the National Institutes of Health (NIH) approach as being too focused on fundamental research and not enough on studies directly related to addressing bioterror

threats. Conversely, the House bill keeps bioterror research in the NIH but gives DHS a strong advisory role. The House bill, which is supported by many biomedical research groups, is motivated by the view that giving DHS control of the NIH's \$1-billion bioterrorism research portfolio would hinder the development of needed drugs and vaccines. The House bill is also motivated by the view that an experienced agency must be in charge of research and development to produce effective results. Source: Bryon Cloer 5301, MS 1375, 505-844-6069, fax 505-284-9043, bkcloer@sandia.gov

Homeland Security: *Two Views**

Issue	House Bill	Senate Bill
Who Will Manage Bioterror Research?	NIH	DHS
Who Will Regulate Bioterror Agents?	CDC, USDA	DHS
Tech Research Fund	No	Yes
Homeland Security Institute	Yes	No
University-based Research Centers	Yes	No
Science Czar	Yes	Yes
Merit Review of Outside Proposals	Yes	Yes
Limit Classification of Research	Yes	Yes
External Advisory Groups	Yes	Yes

* "Congress Homes In on New Department's R&D Programs," *Science* (August 9, 2002), pp. 912-913.



Second Line of Defense



The mission of the Second Line of Defense (SLD) program of the US Department of Energy (DOE)/National Nuclear Security Administration (NNSA) is to minimize the risk of nuclear proliferation and terrorism through cooperative efforts with foreign governments to strengthen their overall capability to detect and deter illicit trafficking of nuclear material across their borders.

The first step toward doing something about nuclear smuggling and fulfilling the SLD program goals of detection and deterrence of nuclear smuggling was accomplished in June 1998, when the Russian Federation State Customs Committee and DOE signed a protocol on cooperation. Specifically, the protocol called for cooperation on combating illicit trafficking of nuclear and nuclear-related materials. The protocol also encouraged both parties to undertake cooperative efforts to minimize the risk of illicit trafficking. Since 1998, DOE/NNSA has also entered into cooperative agreements with other countries and has initiated activities in those countries as well.

To carry out its mission, NNSA turned to the national laboratories for assistance and expertise. Sandia National Laboratories (SNL) is the SLD project manager for NNSA. Under the leadership of Dr. Charles Massey, Sandia is the systems and program integrator, coordinating the work of all the laboratories involved. SNL is also the technical lead in conducting the physical surveys of potential installation sites, the lead for communication systems design, and the lead in performing the vulnerability analyses that form the basis of when, where, and how much equipment is installed. Other national laboratories have roles in the program, with Los Alamos National Laboratory (LANL) providing technical leadership in radiation detection equipment and site prioritization, Oak Ridge National Laboratory (ORNL) providing training materials and assay equipment evaluation, Lawrence Livermore National Laboratory (LLNL) providing classified site prioritization, and Pacific Northwest National Laboratory (PNNL) training foreign personnel in the detection of special nuclear material (SNM).

The goal of preventing the smuggling of SNM across international borders is a complex problem that requires long-term systematic solutions. Nevertheless, the threat posed by nuclear smuggling must be addressed immediately. Therefore, the SLD strategy has two components:

to address immediate needs at strategic points of entry in the short term and to strengthen the long-term capability of our allies to detect and respond to illicit trafficking in nuclear materials.

The short-term goals of SLD are met in two ways. First, the program identifies and prioritizes the most significant smuggling pathways using a prioritization model based on regional and global perspectives – taking into account open source and classified information. Second, based on the sites identified in the prioritization efforts, the program provides the technical and financial assistance for equipping these vulnerable sites with radiation detection equipment integrated into local/regional customs agencies or border guard systems.

The long-term objectives of the program are to: 1) deploy radiation detection equipment that is optimized for border use, 2) integrate this equipment into local, regional, and national communications systems that will allow appropriate response at all levels; 3) cooperatively train foreign officials in the use and limitations of the systems provided; and finally, 4) plan long-term sustainability into every level of the program, from system design to equipment specifications to the provision of spare parts and training so that life-cycle costs are met and the field capabilities are sustained.

As of June 2002, the SLD program has installed well over 120 nuclear material detection systems. All of the systems are in operation, and the security of many border crossings has been improved due to the recommendations and installation of physical improvements by the SLD program. Border crossings successfully addressed include vehicle crossings, rail crossings, airports, and seaports. Over 100 new detection systems have been ordered and are in various states of manufacture, with many ready for installation in sites that will be completed this year. So far in 2002, the SLD team has surveyed over 50 border crossings in at least five different countries, including Russia and Kazakhstan.

Another component of the SLD program is work in support of the US Customs Service Container Security Initiative. Consistent with its outside-the-contiguous-US (OCONUS) focus, program staff are surveying and equipping foreign megaports with radiation detection equipment to prescreen container cargo bound for the US.

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VNIIA Hosts US-Russia Counterterrorism Workshop



In April 2002, laboratory directors and other representatives of US national laboratories and Russian weapons facilities met at the Bishop's Lodge in Santa Fe, New Mexico. At this Laboratory Directors' Meeting, the US and Russian representatives agreed to hold a counterterrorism workshop on exploring areas of cooperation "to establish a baseline of detection requirements that would drive the development of detection capabilities under US-Russian collaborative efforts." The participants agreed that collaborative projects that may result from these discussions will be implemented under existing agreements, including WSSX, ISTC, IPP, and other lab-to-lab programs. The All-Russian Research Institute of Automatics (VNIIA) offered to host the workshop from June 18 through 20, 2002, in Moscow.

The objectives of the June workshop, titled *Science and Engineering Issues Related to Detection of Radioactive and Explosive Hazardous Materials*, included assessing the threat of radiological terrorism and its consequences, sharing approaches and technologies for detecting at-risk materials that could be used in terrorist devices, discussing requirements for deploying detection systems, and identifying areas for future cooperation. This workshop was conducted as a technical exchange under the Joint US-Russian Working Group on Counterterrorism, and workshop plans were coordinated through the Counterterrorism Support Group (CSG).

US participants in the workshop included representatives of the Department of Energy/National Nuclear Security

Administration (NNSA), the Department of Defense, the Department of State, Sandia National Laboratories (SNL), Los Alamos National Laboratory (LANL), Lawrence Livermore National Laboratory (LLNL), the US Embassy Moscow, and the Department of Energy Moscow Office at the Moscow Embassy. Russian attendees included representatives from the Ministry of Atomic Energy (MINATOM), the Ministry of Defense, the State Customs Committee (SCC), the All-Russian Scientific Research Institute of Experimental Physics (VNIIEF), the All-Russian Scientific Research Institute of Technical Physics (VNIITF), VNIIA, and the Federal Security Bureau (FSB).

The workshop opened with remarks from VNIIA Director Yuri N. Barmakov, MINATOM host I.E. Zababakhin, workshop coordinator A.S. Sviridov (VNIIA), and the head of the US delegation, Maureen McCarthy (NNSA). During the first day, the workshop was divided into two topical areas: "End-User and Threat Definition" discussions and "Overview of the Current State of Radiation and Explosives Detection Technologies." Under the first topic, six presentations covered issues such as end-user requirements, comparative technologies, radiological dispersal devices (RDD), classification of nuclear terrorism threats, and monitoring of hazardous material. Under the second topic, five presentations covered questions related to radiation and high explosives (HE) detection technologies, and each of the Russian institutes presented an overview of proposals for projects in this area.

VNIIA Hosts CT Workshop continued on page 11



US and Russian participants gather for a photo at the June 2002 counterterrorism technical workshop at VNIIA.

Excerpts from Joint Statement on Counterterrorism Cooperation

At their summit in Moscow on May 24, 2002, US President George W. Bush and Russian President Vladimir Putin issued a joint statement reaffirming their commitment to fight terrorism "in all its forms wherever it may occur" and commending the efforts of the worldwide coalition against terrorism that was formed after the terrorist attacks of September 11.

Reaffirming our commitment expressed on October 21, 2001 to fight terrorism in all its forms wherever it may occur, we commend the efforts of the worldwide coalition against terrorism since the tragic events of September 11, 2001. The member nations of the coalition must continue their concerted action to deny safe haven to terrorists; to destroy their financial, logistical, communications, and other operational networks; and to bring terrorists to justice. We note with satisfaction that US-Russia counterterrorism cooperation is making an important contribution to the global coalition against terrorism.

...

We will work to strengthen national, bilateral, and multilateral measures to prevent the proliferation of weapons of mass destruction, related technologies, and delivery means as an essential element of the fight against international terrorism and all those who support it.

An important step in our joint cooperation will be a meeting of our scientists in June. We will seek to develop jointly new technology to detect nuclear material that can be used to manufacture weapons for purposes of terrorism.

...

Source: <http://usinfo.state.gov/topical/pol/terror/02052408.htm>

VNIIA Hosts CT Workshop continued from page 10

On the second day of the workshop, the topic addressed was explosives detection technologies, including methods such as active interrogation of HE and trace-based explosives detection. The US delegation received a tour of the FSB Museum, and an afternoon poster session demonstrated applicable VNIIA, VNIIEF, and VNIITF technologies, including portal monitors and various radiation detectors.

The third day of the workshop focused on radiation detection technologies, including germanium, neutron, and gamma-ray detectors. One possible application mentioned detection systems for sea containers. Another Russian proposal suggested the creation of a US-Russian Nuclear Security and Counterterrorism Center and a Standard Regional Laboratory for Antiterrorism.

After extensive discussions about specific technologies, the US and Russian participants initiated a more strategic approach to prioritize potential areas for collaboration. The participants established three contact groups that would develop work plans and prioritize areas of mutual interest. The contact groups will report their findings at a second workshop to be hosted by SNL in Albuquerque in October 2002.

Each contact group will be coordinated by a US and a Russian laboratory representative as listed below. Each group's coordinators will be responsible for ensuring that the entire suite of appropriate technologies from their respective countries is represented by the group's draft work plan.

- A. "Understanding the Threat" will address which materials pose the highest risk.

Coordinators: L. Avens (LANL) and R. Voznyuk (VNIITF)

Topics of interest may include

1. radiological source risk assessment
 2. vulnerability assessments for radiological sources
 3. a glossary of terms relating to counterterrorism
- B. "Detection and Prevention" will address radiological/nuclear (R/N) source security and detection of R/N and HE materials and devices in transit and in storage.

VNIIA Hosts CT Workshop continued on page 12

Catalog of DOE/NNSA Capabilities to Combat Terrorism

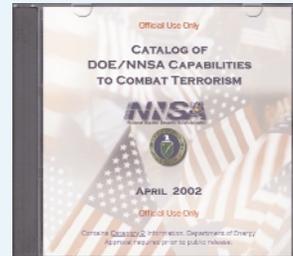


In response to the September 11, 2001, terrorist attacks on the United States, Sandia National Laboratories recently completed the *Catalog of DOE/NNSA Capabilities to Combat Terrorism*. The catalog, a major product of the NNSA Combating Terrorism Task Force chartered by General John Gordon, identifies and organizes information about the technologies and capabilities of the DOE/NNSA laboratories applicable to supporting US national security needs in the fight against terrorism.

Notable among the capabilities highlighted in the catalog are Sandia's Aqueous Decontamination Formulation for Chemical and Biological Agents used in the anthrax decontamination of the US Congressional Offices and the K-9 Collar Camera Kit, a Sandia technology employed by the Federal Emergency Management Agency in the search for survivors at the World Trade Center.

SNL's coordination of database development and technical input from fifteen DOE/NNSA sites was vital to the completion of this important contribution to the war against terrorism. Early working drafts of the catalog were distributed to the laboratories' working groups and briefed to key government officials, including Tom Ridge, Director of the Office of Homeland Security, during his February 2002 visit to SNL.

The Catalog of DOE/NNSA Capabilities to Combat Terrorism compiles technologies and capabilities current as of April 2002. For further information, contact Sandia National Laboratories International Security Programs, 505-845-9928 or 505-845-9596.



Technologies and capabilities in the catalog are arranged in a framework established by NNSA that identifies potential functions (Indications/Warnings, Prevention/Protection, Consequence Management, Attribution, Offensive Military Actions), types of threat mitigated, applications area, and availability of each technology. In addition, the entry for each technology includes a technical description, keywords, an image where appropriate, and a point of contact. Two versions of the catalog – a PDF version and an interactive searchable database – have been prepared. The interactive version allows for user-defined search parameters and customized reporting functions and output. Source: Nancy Orlando-Gay 5302, MS 1376, 505-845-9596, fax 505-845-0331, norland@sandia.gov

VNIIA Hosts CT Workshop continued from page 11

Coordinators: Holly Dockery, Manager MPC&A Programs Department 5350 (SNL), I. Zababakhin (MINATOM), and A. Sviridov (VNIIA)

Topics of interest may include

1. physical security of radiological sources in storage and in transport
2. testing, evaluation, and certification of existing detection technologies
3. detector deployment challenges to meet end-user requirements
4. new detector approaches, including active interrogation
5. detector production and commercialization

C. "Response and Recovery" will address consequence mitigation.

Coordinators: W. Dunlop (LLNL) and L. Belovodsky (VNIIEF)

Topics of interest may include

1. exposure/contamination monitoring
2. plume modeling
3. decontamination

The workshop Protocol was finalized and signed by Maureen McCarthy, representing NNSA, and MINATOM representative I.E. Zababakhin. This workshop was a superb example of the emerging strategic relationship and cooperation on counterterrorism in response to the US and Russian Presidents' statement at the Moscow Summit in May 2002. (See page 11.)

Sources: Maureen McCarthy, NNSA, 202-586-1656; Stephanie Clarke, NNSA, 202-586-2595; Holly Dockery 5350, MS 1376, 505-284-3913, fax 505-844-6067, hadocke@sandia.gov

NNSA Study on Combating Terrorism



In early spring 2002, General John Gordon (Ret), Administrator of the Department of Energy (DOE)/National Nuclear Security Administration (NNSA), requested that his Chief Science Advisor, Maureen McCarthy, generate in thirty days a report describing NNSA's technical leadership that is available to the US government for combating the threat of weapons of mass destruction (WMD) against the US. The report on the thirty-day study was published May 1, 2002, as an Official Use Only document, *Protecting the Homeland: NNSA/DOE Weapons of Mass Destruction; Counterterrorism and Homeland Security; Science, Technology, and Operations*.

In the introduction to the *Thirty-Day Report*, three major responsibilities are identified within NNSA for providing technical leadership in combating terrorism and assisting in homeland security: 1) Innovative Research and Development, wherein NNSA maintains a cadre of scientists, engineers, and specialized facilities at the national laboratories to be able to conduct focused research on homeland security/counterterrorism problems; 2) Technologies for End Users, wherein NNSA utilizes broad-based science and engineering capabilities of the national laboratories, industry, academia, and others to solve challenging homeland security/counterterrorism problems; and 3) Technical Support to Crisis Response Operations, wherein NNSA serves as the lead technical agency for crisis response operations in the event of a WMD attack.

Included in the report is a section on "Understanding the Threat to America." This is followed by a brief discussion on "Countering the Threat: A Multitiered Approach to Keep WMD Out of America." This multitiered approach has six elements: 1) intelligence collection and assessment, 2) securing target material worldwide, 3) protecting US borders, 4) protecting potential targets, 5) responding to a WMD event, and 6) consequence man-

agement. NNSA has activities in all of these areas. The report also highlights the NNSA historical role in WMD counterterrorism technology response and summarizes ongoing efforts.

This is no longer an NNSA plan. With the imminent establishment of the new Department of Homeland Security and Maureen McCarthy's current appointment to the Department of Homeland Security Transition team, the report will be included in the development of strategies and approaches for the new department. Copies of the report are still available. Contact Keshia Nelson (202-586-2017, keshia.nelson@nnsa.doe.gov).

At the time that this report was being drafted, John Harvey, Director of NNSA's Office of Policy Planning, was having the three NNSA laboratories pinpoint significant research and development areas, identified as Grand Challenges, that should be pursued to strengthen NNSA's ability to contribute and provide the necessary leadership. Six such Grand Challenges were ascertained: 1) Bio Early Warning and Assessment; 2) Disaster Resistant Communities; 3) Border and Aviation Security; 4) Universal Situational Awareness, 5) Wide-Area Characterization, Monitoring, and Decontamination for Chemical; Biological, Radiological, and Nuclear Contamination; and 6) Worldwide Stewardship of Nuclear Materials. These six challenges were included in the *Thirty-Day Report* as long-term research and development efforts that should be pursued by NNSA. All except the last Grand Challenge fit well within the strategic thrust areas identified by the Office of Homeland Security and likewise within the framework of the proposed Department of Homeland Security. Although definitely within the mission space of DOE, this last Grand Challenge, Worldwide Stewardship of Nuclear Materials, naturally would not necessarily be of direct concern for homeland security, since it addresses nuclear material stewardship on an international basis. Source: Dennis Mangan 5320, MS 1363, 505-845-8710, fax 505-284-5974, dlmanga@sandia.gov

Second Line of Defense continued from page 9

The SLD program is the first program to establish and use a defensible methodology for installing radiation detection equipment that is integrated into a systematic national, regional, or site-wide basis on international borders. The SLD program was well underway prior to the horrific events on September 11, 2001, and the importance of this program was reinforced by those

events. The SLD program has successfully installed equipment and implemented processes for detecting and deterring nuclear smuggling. In addition, the SNM detectors in place are extremely capable of also detecting radiological dispersal devices (RDD), a possible terrorism tool. Source: Charles Massey 5356, MS 1377, 505-845-0773, fax 505-284-9038, cdmasse@sandia.gov



Sandia National Laboratories participates in several programs to improve international physical protection of nuclear facilities and materials. The goal of these programs is to decrease the risk of nuclear nonproliferation. In addition to the Material Protection, Control, and Accountability (MPC&A) program in the Russian Federation, Sandia supports a similar program throughout the former states of the Soviet Union and supports the International Atomic Energy Agency (IAEA) physical protection program.

Sandia is part of a multilab team providing support to Department of Energy (DOE)/National Nuclear Security Administration (NNSA) programs to reduce the risk of proliferation of nuclear materials by nations or terrorist groups by improving the physical protection of nuclear facilities and the control of nuclear materials. Sandia's effort is focused on providing technical expertise in the tasks of facility and transportation physical protection effectiveness evaluation, transportation system design and implementation of upgrades to physical protection, and training of government and facility staff in physical protection approaches and technologies. The states for which technical support has been provided include Russia, Belarus, Georgia, Kazakhstan, Latvia, Lithuania, Ukraine, and Uzbekistan. Upgrades and training at facilities in these states have resulted in reduced risk of nuclear proliferation.

The IAEA provides assistance to its member states for improvement of physical protection of nuclear material and facilities. Sandia provides technical support to the IAEA to assist them in accomplishing this mission. This support consists of three types of activities:

1. technical evaluations of facilities to assess the state of physical protection and the impact of potential improvements
2. physical upgrades of facility physical protection, including structural improvements and equipment procurement and installation
3. training in physical protection technologies and methodologies

Evaluations are conducted under the auspices of the IAEA International Physical Protection Advisory Service (IPPAS) program, and Sandia has provided technical support to nine IPPAS missions. As a follow-up to

International Physical Protection continued on page 18

International Training Course for Physical Protection

Sandia National Laboratories has developed a three-week workshop on physical protection of nuclear materials and facilities for nuclear facility operators, regulators, managers, and law enforcement personnel. The purpose of the workshop, called the International Training Course for Physical Protection, is to provide an introduction to a systems approach to physical protection. The ITC was developed for the International Atomic Energy Agency (IAEA) and the US Departments of Energy (DOE) and State (DOS) in support of the Nuclear Nonproliferation Treaty.

Participants are selected for the workshop by the IAEA, in conjunction with DOS and DOE/National Nuclear Security Administration (NNSA), from among applicants employed in the field of physical protection of nuclear material in member states of the IAEA. Once selected, participants are thoroughly screened by the US government before being permitted to attend.

The workshop has been conducted 16 times since 1978 and is currently taught biannually. The next workshop is scheduled for 2004. A recent survey of past students revealed that the vast majority of students are still involved in nuclear physical protection and had successfully applied the principles and methodologies learned in the course.

The course reviews the methodologies for design and evaluation of physical protection systems through a series of 19 lectures by experts in each discipline, supported by sub-groups in which presented materials are reinforced through group discussion and exercises. The workshop also includes field trips and hands-on demonstrations of physical protection equipment. Source: David Ek 5323, MS 1361, 505-845-9891, fax 505-284-5437, drek@sandia.gov

Center 5300 Contributes to Biodefense



Sandia National Laboratories (SNL) has been addressing concerns about bioweapons and bioterrorism for several years. Sandia's International Security Center 5300 has adopted a dual approach toward biodefense. This approach involves first, preventing the diversion of dangerous pathogens and toxins from laboratory facilities (biosecurity) and second, the early identification of the accidental or intentional release of dangerous pathogens into the environment (biosurveillance). Combined, these approaches – preventive and responsive – provide key elements of the US approach to biodefense.

Many current US government programs address the threat of High Consequence Pathogens and Toxins (HCPTs) with little or no emphasis on securing the facilities that house those HCPTs. SNL is a founding member of the Interagency Working Group on Biosecurity (IWGB), which was established in January 2001 at Department of Agriculture initiative to develop guidelines and to assist in shaping policies that will reduce the likelihood that HCPTs would be maliciously diverted from US bioscience research laboratories for biological weapons development. The IWGB defines biosecurity as the full range of security systems for facilities and entities that store, use, and/or transport HCPTs. Current IWGB membership includes the US Departments of Agriculture, Defense, Energy, Health and Human Services, Justice, and Transportation.

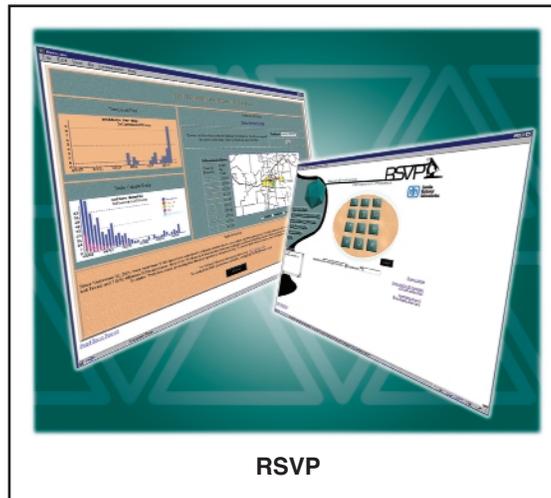
Sandia's biosecurity philosophy involves designing an integrated security system that utilizes a systems-engineering and performance-based approach. This approach protects agreed-upon targets against agreed-upon threats, impacts operations only to the level required, does not hinder the primary research mission, and achieves a balance of system elements for effective allocation of resources. Since September 2001, Dr. Reynolds Salerno of International Security Initiatives Department 5324, in collaboration with a team from Security Systems and Technology Center 5800, has conducted site evaluations and assessments and developed conceptual security designs for eight federal high-containment bioscience laboratories. Additionally, Dr. Salerno and Jenny Koelm

5324 have been invited to present Sandia's biosecurity concept at several conferences and meetings, including the US Delegation to the Biological Weapons Convention, the Office of Homeland Security, the Gordon Research Council, and the Canadian Biosafety Symposium on biosecurity for laboratories.

If HCPTs were released into the environment, either intentionally or accidentally, Sandia's Rapid Syndrome Validation Project (RSVP) would assist the public health community in rapidly identifying the presence of a highly infectious disease. RSVP provides public health officials with information about syndromes – signs and symptoms – of disease without the time delays of laboratory analyses. Designed by Dr. Alan Zelicoff of Cooperative International Programs Department 5320, RSVP portrays critical information in real time, both geographically and temporally, allowing both physicians

and epidemiologists to monitor the overall health of the population. Originally conceived as a way to verify that nations are complying with biological weapons treaties, RSVP's dual-purpose applications both support health surveillance and act as a counter to biological weapons.

RSVP is currently operational in New Mexico and California and will soon be expanding into Texas and perhaps Delaware. In



RSVP

late January, RSVP provided timely information on an outbreak of Flu Type-A and RSV (a children's respiratory ailment) to physicians in Las Cruces, NM. Dr. Zelicoff anticipates that RSVP will also soon make the leap to an international system, expanding into Mexico, Singapore, and possibly Russia.

Dr. Zelicoff has testified before several committees in Congress as to the efficacy of a syndrome-monitoring public health system. These hearings have resulted in the Global Pathogens Surveillance and Response bill that was heavily influenced by Dr. Zelicoff. Both RSVP and biosecurity are currently under consideration by the US government as possible alternatives to the verification protocol for the Biological Weapons Convention. Source:

Rebecca Frerichs 5324, MS 1373, 505-284-5951, rlfreeri@sandia.gov

CMC Regional Security Programs



The International Security Center (ISC) 5300 at Sandia National Laboratories seeks to promote international cooperation for a more peaceful world through application of technology. The ISC carries on an active program in pursuit of nonproliferation, arms control, and regional security objectives around the world. The ISC's Cooperative Monitoring Center (CMC) has hosted visitors from approximately 110 countries since it was established in 1994; however, four regions remain the focus of its DOE/NNSA-funded work: East Asia, the Middle East, Central Asia, and South Asia.

In East Asia the ISC is promoting nuclear transparency among several countries that have agreed to share data related to their nuclear reactors on a common Web site. A number of projects are also addressing conventional security concerns on the Korean peninsula and across the Taiwan Straits. In the Middle East, the CMC is establishing its first regional center, with US State Department approval to establish a CMC in Amman, Jordan. In Central Asia a four-nation cooperative water-monitoring project is underway, and the CMC is exploring other potential efforts at border monitoring and cooperative monitoring in the Caspian Sea. One of the largest regional efforts is in South Asia, which is the focus of the remainder of this article.

Tensions between India and Pakistan neared peak levels in the summer of 2002. Pakistan is accused of sponsoring terrorism in India and supporting terrorist incursions across the line of control in Kashmir. India and Pakistan amassed over one million troops along their common border, and artillery shelling occurred often. Terrorist attacks in India have targeted the state assembly in Kashmir, the Indian parliament in Delhi, and army posts and civilians in Kashmir. At the same time, Pakistan has been supporting the US-led war on terrorism and has been working with US forces to hunt down Al-Qaeda members in Pakistan and Afghanistan. These concerns and the complexity of the political landscape have as a backdrop the presence of nuclear weapons in the two

countries and concerns over an escalation, misinterpretation, or miscalculation that could lead to nuclear war.

Projects under the South Asia Regional Security program fall into three categories: conventional military stability, nuclear nonproliferation, and other confidence-building measures. The CMC's conventional military stability efforts focus on actions with the potential to reduce tensions through cooperative land-based border monitoring, cooperative aerial overflights, and naval and maritime cooperation. Based on work by General Mahmud Durrani of Pakistan, a CMC visiting scholar last year, the CMC has deployed a prototype border monitoring facility on Kirtland Air Force Base. This site will be



Participants pause for a photo at the Confidence and Cooperation in South Asian Waters Symposium in Kuala Lumpur, Malaysia.

used to test and demonstrate a variety of ground-based sensors and video systems for border applications. The CMC work on border security led to requests from the State Department to brief Indian Home Minister Advani in January and Pakistani Interior Minister Haider in May. In addition, the CMC participated in the US/India Counterproliferation Joint Working Group meeting in New Delhi in January. Possible future involvement with both countries involves analysis, training, and possi-

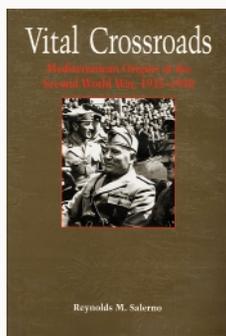
ble experimental deployment of monitoring systems for border applications.

Last fall, the CMC hosted retired Air Marshals from India and Pakistan to analyze the application of aerial monitoring technologies to a possible cooperative regime along the border between India and Pakistan. Air Marshal K. Cariappa of India and Air Marshal A. Chaudhry of Pakistan outlined a phased approach to providing a limited cooperative aerial monitoring regime along the border between their two countries. This concept was briefed to government officials in the US, India, and Pakistan. While current tensions do not permit such cooperation, such an approach could be implemented as an important element of future confidence building. Work with the Defense Threat Reduction

CMC Regional Security Programs continued on page 17

Salerno Pens Book on World War II

In July 2002, Cornell University Press announced the publication of *VITAL CROSSROADS: Mediterranean Origins of the Second World War, 1935-1940* (ISBN: 0-8014-3772-5) by Reynolds M. Salerno, a Senior Member of the Technical Staff in Sandia's International Security Initiatives Department 5324. Salerno, who received his PhD from Yale University in 1997, wrote the book based on his graduate studies in history and international security.



According to the Cornell University Press description of the book: "Salerno shows that the situation in the Mediterranean played a decisive role in the European drama of the late 1930s and profoundly influenced the manner in which the Second World War unfolded. *Vital Crossroads* is the result of the author's remarkable access to and extensive research in twenty-eight archives in five different countries." Source: Reynolds M. Salerno 5324, MS 1371, 505-844-8971, fax 505-284-5055, rmsaler@sandia.gov

CMC Regional Security Programs continued from page 16

Agency will continue as the CMC seeks to provide training to air force officials from both sides.

In April 2002 the CMC was a primary sponsor of a meeting between retired naval officers of India and Pakistan. The meeting, held in Malaysia, brought together retired naval chiefs, other admirals, and maritime businessmen from the region to explore options for developing Incidents at Sea (INCSEA) agreements, for evaluating options for delimiting maritime boundaries, and for conducting cooperative monitoring projects such as vessel tracking and establishing maritime risk reduction centers. This work is being done collaboratively with the Canadian Department of External Affairs and International Trade and scholars from Dalhousie University in Nova Scotia, Canada. This effort is the only current dialogue devoted to naval and maritime cooperation between India and Pakistan.

The US has placed limitations on engagement with India and Pakistan on nuclear issues, but the CMC has been pursuing a program of nuclear transparency with the Bangladesh Atomic Energy Commission (BAEC). Dr. C.S. Karim, a member of the BAEC, served as a visiting scholar at the CMC in the spring of 2002 to develop a plan for deployment of monitoring systems and sharing of data on airborne radiation and reactor operations at their 3-megawatt Triga reactor site outside of Dhaka. Work is underway to finalize plans, obtain approvals, and begin the process of data collection and transparency. These efforts will demonstrate these concepts for regional audiences and provide for enhanced monitoring

capabilities and expertise for the BAEC. Other nonproliferation efforts being conducted in the summer of 2002 address monitoring of missile deployment status with Dr. Arvind Kumar of India and evaluating nuclear terrorism concerns in South Asia with visiting scholars Dr. Rajesh Basur of India and Dr. Hasan Rizvi of Pakistan.

Finally, the CMC is continuing its efforts of several years to provide an active program of river water quality monitoring in South Asia. This effort, jointly funded by the US State Department South Asia Office of Regional Environmental Affairs and DOE/NNSA, is collecting data on shared rivers in the Ganges and Indus River basins with partners in India, Pakistan, Nepal, and Bangladesh. A successful workshop in February 2002 included training on new monitoring equipment that has been provided to the partners and establishing sampling and analysis plans. The United Nations and other organizations are interested in this project as one of the few successful examples of environmental cooperation among these countries.

In addition to these project activities, the South Asia program has published a number of papers and reports, participated in several academic forums on South Asian stability, hosted meetings on concepts for scientific collaboration in the Himalayas, and served as a resource for Sandia and NNSA on South Asia security issues. As tensions remain high in South Asia, the CMC continues to seek ways to contribute to tension reduction and confidence building in support of US government objectives in the region. Source: Kent Biringer 5324, MS1373, 505-284-5048, fax 505-284-5055, klbirin@sandia.gov

ISTC Efforts Combat Terrorism



The International Science and Technology Center (ISTC) in Moscow was established by intergovernmental agreement in November 1992. The ISTC coordinates the efforts of numerous governments, international organizations, and private sector industries to provide weapons scientists from Russia and the Commonwealth of Independent States new opportunities in international partnership. Partnership through the ISTC addresses initiatives from government agencies and programs, private industry, and international organizations - strengthening scientist-to-scientist exchange and promoting long-term integration and mutual benefits for all participants.

The ISTC is funded by the US, the European Union, Japan, and Korea and in turn funds projects in Armenia, Belarus, Georgia, Kazakhstan, and the Kyrgyz Republic as well as Russia. In 2001, the ISTC paid 22,704 individual project participants US\$29,853,000 in grant payments for a total of 1,323,691 person-days of effort on ISTC projects from a total project budget of about \$75 million.

A crucial result of a primary ISTC objective is retention of skilled scientists and engineers in their native countries with attractive jobs, preventing dissatisfaction that leads to joining terrorist groups or selling valuable technology or material to such groups. In addition, many

ISTC projects are geared to combating terrorism:

- detection of dangerous or illicit materials in transportation containers, luggage, or vehicles
- analyzing and changing the operating methods of critical infrastructure systems to improve availability during accidents, natural disasters, and deliberate attacks
- safe securing of dangerous materials such as radioactive substances, chemical poisons, and biological threats
- safe processing, storage, and disposal of dangerous wastes



The ISTC supports numerous seminar and workshop events, such as this seminar in Severodvinsk, Russia, on nuclear submarine disposal.

Source: Jim Arzigian 5327, MS 1374, 505-844-2747, fax 505-844-8119, jsarzig@sandia.gov

International Physical Protection continued from page 14

IPPAS missions, Sandia has provided upgrades of physical protection at five facilities. Sandia experts have developed and presented training on physical protection design and evaluation methodologies, design basis threat development, and vital area identification. Source: David Ek 5323, MS 1361, 505-845-9891, fax 505-284-5437, drek@sandia.gov

Sandians Testify continued from page 7

development and coordinate with other agencies. John Marburger, the president's science adviser, said in an interview that the White House still wants "a central location for homeland security R&D."

A plan to create the HSD by September 11, 2002, to commemorate the attacks on the World Trade Center and the Pentagon was supported widely and encouraged by the White House. The House passed its version of the bill just before its summer recess began. However the

Senate was not able to vote on its bill before the recess and indicated the HSD bill would be the first order of business to be addressed upon returning after Labor Day. The delay has prevented establishment of the new agency in time for the anniversary of the September 11 attacks. The Senate version of the bill also differs from the House legislation in some key areas that have prompted the White House to threaten vetoing the bill. This article was assembled from various press releases, news stories, and Congressional testimonies.

INMM Sessions Focus on Combating Terrorism



The Institute of Nuclear Materials Management (INMM) held its annual meeting in Orlando, Florida, on June 23 through 27, 2002. Sandia National Laboratories is a major participant in the INMM and thus in the annual meeting, and a number of personnel from Sandia's International Security Center hold positions in the INMM: J.D. Williams, the outgoing President of the INMM, is succeeded by John C. Matter; Ken Ystesund is the exhibits chair; Don Glidewell, the Southwest Chapter president; Dennis Mangan, the journal technical editor and a former president of the Institute; Steve Ortiz, the Physical Protection Technical Division chair; and Ken Sorenson, the Packaging and Transportation Technical Division chair. Forty seven Sandians attended the June meeting, and 22 papers were presented by Sandians.

Combating terrorism was an overarching tone of the 2002 annual meeting. Two sessions at the meeting focused on combating terrorism: an INMM Physical Protection Division session on "Counter Terrorism" and the Closing Plenary Session on "Combating Nuclear Terrorism." In addition, some papers presented in other sessions addressed combating terrorism, and many of the topics of the physical protection papers are directly applicable to combating terrorism.

In the physical protection session, George Bunn, Center for International Security and Cooperation at Stanford University, California, presented two papers. In the first presentation Bunn considered terrorist threats to civilian nuclear installations in the US and Europe, and in the second paper he addressed the threat of terrorists obtaining weapons-usable nuclear material from research reactors and other facilities.

In the same session Vladimir Orlov from the Monterey Institute for International Studies in California discussed the need for Russian-US cooperation against the nuclear terrorism threat. Sean Barnett, Shaw Pittman LLP, presented a comprehensive overview of legislative proposals to improve security at US nuclear power plants, indicating his views on the upside and downside for each bill. In addition, Tom Burr of Los Alamos National Laboratory discussed the statistical problem of distinguishing natural from human-instigated disease outbreaks and presented two case examples.

The INMM Government-Industry Liaison Committee organized the Closing Plenary on Combating Nuclear

Terrorism, which consisted of three invited speakers followed by a question-and-answer period. First, Mark Whitworth, Federal Bureau of Investigation (FBI) Supervisory Special Agent, presented a history of eight terrorist explosive attacks in the last decade, beginning and ending with the World Trade Center events of February 1993 and September 11, 2001, respectively.

The second speaker, Michael Weber, Deputy Director of the US Nuclear Regulatory Commission's (NRC) new Office of Nuclear Security and Incident Response, discussed what his agency and industry are doing to ensure nuclear security in the current dynamic threat environment. He posed four challenges requiring resolution for the war against terrorism: 1) achieving an acceptable mix of risk avoidance and risk mitigation 2) delineating

private versus public sector responsibilities 3) optimizing security across our entire infrastructure, and 4) achieving security in an open environment.



INMM 43rd Annual Meeting
Closing Plenary speakers
(l to r): Michael Weber
(NRC), Anita Nilsson (IAEA),
and Mark Whitworth (FBI)

Anita Nilsson, Head of the International Atomic Energy Agency (IAEA) Office of Physical Protection and Material Security and IAEA

Nuclear Security Coordinator, was the final Closing Plenary speaker. Dr. Nilsson described the needed and planned increase in international and national efforts for nuclear security, emphasizing that nuclear security is a global issue achieved by national responsibility. Dr. Nilsson called for a comprehensive approach that includes prevention, detection, and response via a graded approach based on a security culture. She noted that the IAEA Board of Governors has approved an expanded program in eight related areas of physical protection, funded by \$11.5-million contributed by various IAEA member states and other sources, such as the Nuclear Threat Initiative.

Additional information and details for these papers are available from the authors and will be published later this year by the INMM in the 43rd Annual Meeting Proceedings. (contact: www.inmm.org)

Source: John C. Matter 5323, MS 1361, 505-845-8103, fax 505-284-5437, jcmatte@sandia.gov

Calendar: Visits, Workshops, and Conferences

Visits

July 31 David Nokes, Vice President National Security and Arms Control Division 5000, hosts Maureen McCarthy, Chief Scientist, NNSA/DOE, Member of the Transition Team for Stand-up of Department of Homeland Security (DHS), to impart in-depth information on Sandia's homeland security technologies and work and to discuss what Sandia can do to help meet the Transition Team's needs to prepare for the stand-up of the new DHS. T. J. Allard 12100, 505-844-5581

August 7 David Nokes, Vice President National Security and Arms Control Division 5000, hosts Senator Jeff Bingaman (D-NM) for briefings, tours, and demonstrations on homeland security, including a tour of the new International Programs Building. Jim Chavez 12121, 505-844-4485

August 12 David Nokes, Vice President of National Security and Arms Control Division 5000, hosts Dr. Penrose Albright's Office of Science and Technology Policy staff members, Shanna Dale, Dr. Bill Jeffrey, and Dr. Ed Hildebrand, to discuss Sandia work that can be used in the new Department of Homeland Security. T. J. Allard 12100, 505-844-5581

August 26-28 Dori Ellis, Director of International Security Center 5300, hosts the Distinguished Advisory Panel for Arms Control and Nonproliferation in the new International Programs Building. Dori Ellis 5300, 505-845-3077

August 28 David Nokes, Vice President of National Security and Arms Control Division 5000, hosts Dr. Penrose Albright, Senior Director for Research and Development, Office of Homeland Security, and Assistant Director for Homeland and National Security, Office of Science and Technology Policy, to discuss Sandia work that can be used in the Department of Homeland Security. T. J. Allard 12100, 505-844-5581

Workshops and Conferences

August 3-14 Denver, CO, and Albuquerque, NM: Sandia hosts Russian representatives of VNIIA, VNIIEF, and VNIITF at the International Systems Safety Conference in Denver and for meetings in Albuquerque to discuss ongoing and future collaborations. (NA-121.1, Nuclear Explosives and Weapons Safety) Richard Smith 5328, 505-844-4476

August 17 – September 1 Los Angeles, CA, and Raton, NM: Sandia hosts Russian representatives of SPEKTR-Conversion for ISO training and demining IPP discussions. (NA-24, Office for International Security and Nonproliferation) Deepesh Kholwadwala 15222, 505-284-3683

September 6-14 Salzburg, Austria: Dori Ellis, Director of International Security Center 5300, speaks at the International Conference on Physical Protection hosted by the University of Salzburg. J.D. Williams 5350 presents a poster paper; Jim Blankenship 5845 acts as a tutorial speaker; and Sarah Dickerson 5323 also attends. (SNL Program Development) Dori Ellis 5300, 505-845-3077

September 16-17 Vladivostok, Russia: John Olsen attends the MINATOM Conference on Ecological Problems of Dismantling Submarines. (NA-241) John Olsen 5324, 505-284-5052

October 14-18 Beijing, China: Terri Olascoaga, Deputy Director of International Security Programs 5301, and John Olsen, International Security Initiatives 5324, present at the 8th ISODARCO-Beijing Seminar on Arms Control. (NA-241; SNL Program Development) John Olsen 5324, 505-284-5052

October 24-31 Moscow, Sarov, and Snezhinsk, Russia: Roger Hagengruber, David Nokes, and Dori Ellis visit VNIIA, VNIIEF, VNIITF, and Kurchatov Institute to discuss Sandia's current collaborations and potential future initiatives. (SNL Program Development) Dori Ellis 5300, 505-845-3077

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Sandia National Laboratories is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy under Contract DE-AC04-94AL85000.

SAND2002-3171P

PUBLISHED BY:
Sandia National Laboratories
International Security Programs
Doris E. Ellis, Director

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