



### In This Issue

*Nevada Puts Green Features  
In An Old Building.....3*

*NNSA's Global Threat Reduction  
Initiative - Reducing Nuclear  
Threats.....4*

*Livermore Lab Helps Bring  
Science Into The Classroom .....7*

## NNSA Conducts Counterterrorism Briefing For IAEA

Joseph Krol, NNSA's associate administrator for emergency operations, recently briefed the International Atomic Energy Agency (IAEA) and IAEA member countries on strategies and capabilities for responding to nuclear terrorist threats. He discussed the threat of nuclear terrorism, various ways to counter that threat, and the specific role that nuclear materials detection and related capabilities play in the strategy. Krol also provided information on U.S. assets that are available to support the response to a terrorist event. He briefed the IAEA at the request of U.S. Ambassador Gregory Schulte, the permanent U.S. representative to the United Nations Office in Vienna, the IAEA, and other international organizations in Vienna.

"NNSA has a world-class

*(continued on page 2)*



**REDUCING NUCLEAR THREATS:** In May 2008, NNSA oversaw the removal of nearly 30 pounds of HEU in spent nuclear fuel from Latvia that was secured at a Russian nuclear facility. With this shipment, NNSA has completed the removal of all HEU from Latvia. See pages 4 and 5 for more on reducing nuclear threats and NNSA's Global Threat Reduction Initiative.

## NNSA Awards \$1.7 Million In Nonproliferation R&D Grants To Small Businesses

Small businesses across the United States have been awarded \$1.7 million by NNSA to fund nuclear nonproliferation research and development (R&D). The research will support and strengthen the U.S. response to threats to U.S. national security posed by the proliferation of weapons of mass destruction (WMD).

"Investing in research and development for remote sensing, radiation detection, and seismic detection will help the NNSA complete its mission to prevent the proliferation of weapons of mass destruction," said NNSA Deputy Administrator for Defense Nuclear Nonproliferation William Tobey. "In partnership with these small businesses, NNSA will continue to bolster our nation's detection capabilities."

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## NNSA Conducts Counterterrorism Briefing Of IAEA

(continued from page 1)

nuclear emergency response capability and is willing to support the efforts of other nations," said Krol. "I am always proud to talk about the amazing men and women we have working hard every day on this important national security mission."

NNSA has over 60 years of nuclear weapons experience in responding to nuclear and radiological accidents and incidents worldwide. It provides technical support to the U.S. Departments of Homeland Security, Justice, State, and Defense for nuclear terrorism events and domestic nuclear weapon accidents and incidents. NNSA emergency response assets also provide support to nuclear site and facility accidents and incidents.

NNSA's technical and expert knowledge of nuclear weapons and other explosive devices is useful in developing strategies to respond to possible radiological dispersal devices, often known as "dirty bombs," and improvised nuclear devices. NNSA is the lead agency to support federal, state, and local authorities to help locate, recover and secure a radiological device or a lost or stolen U.S. nuclear weapon. The agency also has the capability to conduct forensic analysis of a sample or device to identify, among other things, its source and the persons or groups responsible for its use in planned or actual acts of terrorism.

## NNSA Awards \$1.7 Million In R&D Grants To Small Businesses

(continued from page 1)

NNSA is the principal U.S. government agency investing in long-term strategic and technical solutions to detect the proliferation of WMD. The awards will go to 16 U.S. small businesses in ten states, all dedicated to cutting-edge technology research.

The funding was provided by NNSA's Office of Nonproliferation Research and Development, which conducts basic and applied research and development, testing, and evaluation to produce technologies that lead to proliferation detection and nuclear detonation detection systems. The office focuses on developing technologies, demonstrating and testing prototypes, and providing operational hardware and software.

This year, projects selected under the nonproliferation R&D programs focused on technologies to develop imaging systems to identify WMDs and nuclear materials from the air and in space, and projects to develop new radiation detection materials for applications in national and homeland security inspection venues. Awards also focused on research that will improve seismic detection systems for nuclear detonation detection.

The grants were awarded as part of the Department of Energy's overall Small Business Innovation Research (SBIR) and Small Business Technology Transfer Program. SBIR helps ensure that the nation's small, high-tech, innovative businesses are a significant part of the federal government's research and development efforts. DOE is one of 11 federal departments participating in the SBIR program. For a list of the nonproliferation R&D grants, e-mail Al Stotts, [astotts@doeal.gov](mailto:astotts@doeal.gov).

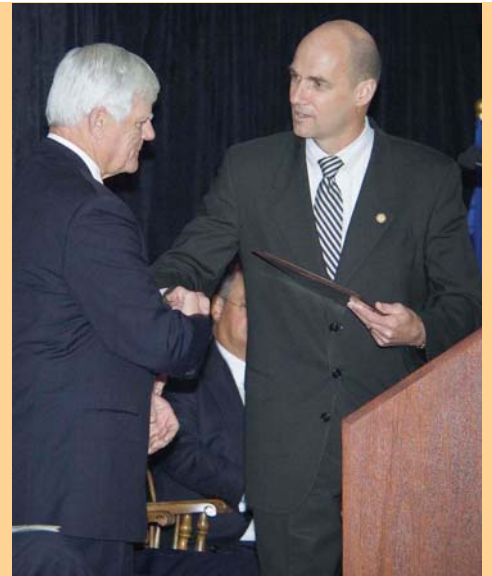
**OPSEC AWARDS:**  
NNSA Nevada Site Office Assistant Manager for Safeguards and Security Ray Phifer (right) accepts the first place national OPSEC Organizational Award from Intergency OPSEC Staff Director



Marty Quick at a recent national conference in Denver, Colo. The award is given to organizations that have established a strong OPSEC culture within the workforce and that have initiated solid OPSEC practices.

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**OMEGA DEDICATED:** NNSA has added four high energy laser beam lines to its Omega EP (extended performance) laser system, located at the University of Rochester in New York, which is used to generate extreme temperature and pressure conditions approaching those existing in nuclear explosions. The photo above shows Omega's laser bay with its four beamlines and the target chamber in the far center. NNSA Administrator Thomas D'Agostino (right) presents the Administrator's Silver Award to Captain Steven J. Loucks (ret.) of the University of Rochester's Laboratory for Laser Energetics during the Omega dedication ceremony. Experiments at the Omega laser system are complemented by similar work done at NNSA's Z Machine, located at Sandia National Laboratories, and, in the near future, the National Ignition Facility, located at Lawrence Livermore National Laboratory. The research gives scientists a broader understanding of the nation's aging nuclear weapons stockpile.

## Nevada Puts Green Features In An Old Building

The first green building in the Nevada federal system was recently launched in an event that attracted top state and Congressional involvement. A ribbon cutting celebration signaled the official end of an extensive 14-month remodel to remedy legacy beryllium issues in building B3 at NNSA's Nevada Site Office (NSO).

Nevada Governor Jim Gibbons extended his congratulations, as did Congresswoman Shelley Berkley, and City of North Las Vegas Mayor Michael Montandon. Representatives from all Nevada Congressional members were in attendance.

The resulting facility is considered a landmark achievement, and is expected to receive a Silver LEED Certification by the Green Building Council. "This is a remarkable example of a 1980s building strategically converted into an energy efficient structure for the 2000s," said Laura Tomlinson, acting NSO deputy

manager. "Further, it is an effective demonstration of the efficiency our contractor-government team can achieve."

Offering more than 71,000 square feet of usable space, the B3 building incorporates state-of-the-art automation to monitor and control lighting, heating, cooling and air quality.

Additional green features include an insulated roof which reduces building heat and what is known as the heat island effect, enhanced refrigeration management, and desert-friendly landscaping.

Energy performance is expected to be optimized increasing energy savings by 17.5 percent. In addition to purchasing goods locally where possible, construction waste management was utilized to recycle construction debris.

In total, conservation improvements in water and energy use will save more than 35 percent in building energy

consumption levels. Approximately 14,000 gallons of water will be saved annually. B3 energy efficiency is further enhanced by adding interior and exterior lighting to the existing power management system.

The building now has the capacity to house 400 workers, which is a 70-person increase over the previous configuration. This will allow the consolidation of NSTec workers currently housed ten miles away, saving fuel and reducing a corresponding amount of exhaust emissions. The savings generated through the move of employees from that distant facility to B3 results in a total return on the construction investment in only three years.

Tomlinson said the project is "a strong example of innovation and efficiency." She noted that B3 is already generating favorable attention and has been recognized by Department of Energy's Pollution Prevention Award Program with an Environmental Stewardship honor.

# NNSA's GTRI - Reducing Nu

In secret and under secure conditions, over 30 pounds of Soviet-origin highly enriched uranium (HEU) in "spent" nuclear fuel was successfully removed by rail last month from Latvia and secured at a Russian nuclear facility. Several international organizations cooperated with NNSA's Global Treat Reduction Initiative (GTRI) to remove the 14.4 kilograms of HEU.

Latvia is the first country to return all Soviet-origin HEU to secure sites under GTRI. It is the second shipment of HEU to be safely and securely returned to Russia from Latvia. The first shipment of three kilograms of Soviet-origin HEU "fresh" fuel occurred in May 2005.

GTRI's mission is to reduce and protect vulnerable nuclear and radiological materials located at civilian sites worldwide. With the successful completion of this shipment, a total of approximately 604 kilograms of HEU fresh and spent fuel has been returned to Russia from Serbia, Romania, Bulgaria, Libya, Uzbekistan, Poland, Germany, Latvia, the Czech Republic, and Vietnam.

Since its inception in 2004, GTRI has accelerated its nuclear security efforts and made significant progress to reduce the risk posed by vulnerable civilian nuclear and radiological materials, which could be used by terrorists to make an improvised nuclear device or a

radiological dispersal device, i.e. a "dirty bomb."

To accomplish the May HEU removal, NNSA worked closely with the Russian Federation, Latvia and the International

facility near Chelyabinsk.

Four shipments of spent fuel from Uzbekistan totaling 63 kilograms were shipped to Russia in 2006 and 80 kilograms of HEU spent fuel were shipped from the



**HEU RETURNED:** In 2006, NNSA returned more than 590 pounds of highly enriched uranium from a former East German civilian nuclear facility to Russia in the largest shipment of Soviet-origin HEU ever conducted under GTRI.

Czech Republic to Russia in December 2007.

Atomic Energy Agency. The HEU was packaged into twenty TUK-19 specialized transportation casks and then transported under guard from the Salaspils Research Reactor to a railroad station near Riga, the capital of Latvia. At the railroad station, the casks were loaded onto special TUK-5 railroad cars and shipped to a secure Russian

While Latvia is the first country under which NNSA removed all its Soviet-origin HEU, the program has removed all U.S.-origin HEU fuel from Argentina, Brazil, Chile, Colombia, Denmark, Greece, Italy, Philippines, Slovenia, South Korea, Spain, Sweden and Thailand.

Prior to the creation of GTRI, only two research reactors were converted from the use of HEU to low enriched uranium (LEU) during



# Nuclear Threats



the four-year period from 2000 to 2004. The last U.S. research reactor was converted in 2000 and the last international research reactor was converted in 2004.

Since May 2004, 12 research reactors have been converted to LEU instead of using HEU, which can be used to make a nuclear weapon.

**SECURE SHIPMENT:** At a railroad station in Latvia near Riga, casks of highly enriched uranium were loaded onto special TUK-5 railroad cars and shipped to a secure Russian facility near Chelyabinsk.

Physical protection upgrades have also been completed in over 40 countries at more than 575 radiological sites, including industrial,

medical, and commercial facilities.

Since May 2004, NNSA has secured more than 575 vulnerable radiological sites around the world containing over 8,000,000 curies - enough for approximately 8,000 dirty bombs.

In the United States since May 2004, NNSA has removed over 5,150 at-risk radiological sources totaling 105,000 Curies - enough for more than 300 dirty bombs. Over the life of the program, more than 15,150 radioactive sources have been secured from around the country.



**SUCCESSFUL REMOVAL:**

In December 2007, NNSA oversaw the safe and secure return of 176 pounds of highly enriched uranium in spent nuclear fuel to Russia from the Nuclear Research Institute in Rez, Czech Republic.

## Bomb Squads Saddle Up For Robot Rodeo



**GIT ALONG LITTLE ROBBIE:** Hazardous devices teams from around the Southwest had the opportunity to wrangle their bomb squad robots at the second annual Robot Rodeo hosted in May by NNSA's Los Alamos National Laboratory. It was held in partnership with Sandia National Laboratories and the International Association of Bomb Technicians and Investigators, Region II. Top left: the New Mexico State Police robot attempts to drag a "fireman" to safety. Earlier in the scenario, the robot was required to handle a fire hose. Top right: A close look at the control panel and screen of the Santa Fe Police department's bomb squad robot. Bottom left: Lieutenant Abram Anaya of the Santa Fe Police Department keeps an eye on his robot as it climbs a pair of ladders on one of the obstacle courses at Technical Area-49.

## NNSA's Pantex Plant Receives P2 Awards

The use of alternative fuels and recycling has won Pollution Prevention Award Program recognition at NNSA's Pantex Plant with a Best-In-Class award and two Environmental Stewardship Awards. The Best-In-Class award is for the use of E-85 and biodiesel. Projects to remove abandoned railroad tracks and improve electronic stewardship both received Environmental Stewardship honors.

Pantex is committed to being a leader in reducing petroleum fuel consumption through the expanded use of alternative fuels. Since installing an E-85 Fuel Station in 2003, Pantex has steadily increased

the percentage of General Services Administration fleet vehicles capable of using E-85 fuel from 25 percent of vehicles in Fiscal Year (FY) 2004 to more than 40 percent in FY 2007. E-85 is a blended fuel consisting of 85 percent ethanol and 15 percent gasoline.

The Pantex Plant removed and reused more than 12 miles of abandoned railroad track on the site. The project was completed in January 2007 and reduced deferred maintenance by \$31 million. The project included the removal of rail cars, engines,

motorcars and miscellaneous railroad equipment from Pantex, and dismantling approximately 12 miles of railroad track and crossties. The project scope also included fence, road, and parking area repair. A segment of the track, several railcars, and equipment were donated to the Amarillo Railroad Museum. The remaining rail and ties were salvaged to defray project costs. Pantex recycled 2,000 tons of rail and other metal components, 25,000 railroad ties and 20 tons of asphalt from this project.



## Albuquerque Duo Wins Supercomputing Challenge

Two budding scientists from Albuquerque, N.M., high schools captured the top prize during the 2008 New Mexico Supercomputing Challenge sponsored by NNSA's Los Alamos and Sandia national laboratories and hosted at Los Alamos. The challenge is also sponsored by the State of New Mexico.

Erika DeBenedictis of St. Pius X High School and Tony Huang of La Cueva High School won for a team project, "An Analysis of Direct Simulation Monte Carlo and Its Application to Simulating Supersonic Shockwaves," which modeled a spacecraft's reentry into the atmosphere. Each student on the winning team earned \$1,000. Their teacher received a projection system.

The Supercomputing Challenge is open to any New Mexico high-school or middle-school student. More than 330 students from 33 schools around the state spent the school year researching scientific problems, developing sophisticated computer programs, and learning about computer science with mentors from the state's national laboratories and other organizations.

The goal of the year-long event is to teach teams of middle and high schools students how to use powerful computers to analyze, model, and solve real-world problems. Participating students improve their understanding of technology by developing skills in scientific inquiry, modeling, computing, communications, and teamwork.

## Livermore Lab Helps Bring Science Into The Classroom

If you peek inside Dean Reese's science classroom at Tracy High School in California, you might find it difficult to pick out the teacher from the students. Casually dressed and eagerly interacting with his students, Reese blends in with his scholars.

Reese has been teaching physics and conceptual physics at Tracy High for six years. His goal is to teach science to students in a way that "will answer questions they may never have been able to understand before.

"I want the students to leave my classroom with a new perception of the world - viewing physics as a science that can be seen in their daily lives, not a mystery," he said. "Until that has been revealed and someone shows them, they will never know."

After becoming interested in the Lawrence Livermore National Laboratory's (LLNL) education programs through

fellow Tracy High science teacher Kirk Brown, Reese completed the Teacher Research Academy, a collaborative program of LLNL and the University of California, Davis.

The program offers a rigorous, unique four-step approach to introducing teachers to cutting-edge science. Each step, or level, builds upon the knowledge and skills developed in the previous step. The fourth and final level is a capstone six week internship in a research laboratory at LLNL.

The academy provides teachers with access to the scientific community and shows them how to bring the real world of scientific research into the classroom.

"I got to be a student again," Reese said about the program. "It was nice to experience ideas. It prepared me for new challenges." And, he had several challenges ahead.

Partnering with an LLNL scientist, Reese last year presented a "Science on Saturday" public lecture on LLNL's research into hydrogen powered automobiles

to a packed house at the Grand Theatre in Tracy. "It was exciting," he said. "It's science that's going on locally, and a hot topic."

Recently, Reese was accepted into the Department of Energy's Academies Creating Teacher Scientists, which is hosted at LLNL.



**REAL WORLD SCIENCE IN THE CLASSROOM:** Tracy High School teacher Dean Reese watches as his student, Vatsal Jhalani, acquires a mustard leaf sample for analyses.

# PNNL to Verify Nuclear Explosion Detection Network

NNSA has selected Pacific Northwest National Laboratory (PNNL) to one of the United States laboratories for detecting nuclear explosions worldwide. PNNL has been officially certified as part of the International Monitoring System (IMS), a global network of monitoring stations designed to detect nuclear explosions.

"PNNL is the first U.S. National Laboratory to be included in the IMS verification regime," said NNSA's Deputy Administrator for Nonproliferation William Tobey. "The laboratory provides the United States with the ability to analyze samples coming from the International Monitoring System and support the international community in detecting nuclear tests."

The IMS stations routinely collect samples or data to detect signs of a nuclear explosion. When completed, the IMS network will consist of 337 monitoring facilities stationed around the globe. Data from these stations are sent to an International Data Center in Vienna, Austria for analysis. If initial results indicate that a nuclear explosion has occurred, then atmospheric samples are sent to PNNL or one of the other 15 verification laboratories for further evaluation.

NNSA selected PNNL as the U.S. verification laboratory because of the laboratory's world-recognized capabilities in low level analysis and experience in developing and deploying equipment to measure radioactive fallout from nuclear explosions.

## NEW B&W PANTEX

**LEADER:** B&W Pantex has named Greg Meyer general manager of NNSA's Pantex Plant. Meyer previously served as deputy general manager for the plant. "I'm excited about the challenges that come with this opportunity," he said. "B&W Pantex has a strong relationship with our employees, the Pantex Site Office and the community, and I look forward to continuing in those areas. We will also remain focused on extending the site's outstanding performance record in achieving NNSA's mission - maintaining the safety and security of the nuclear weapons stockpile."



# Y-12 Emergency Manager Gets Award

Scott Hawks and Mark Robinson are the two winners of the Department of Energy's (DOE) "Outstanding Service in Emergency Management Award." Hawks and Robinson serve as the Federal officials in Oak Ridge who oversee emergency management programs for DOE's Oak Ridge Reservation.

Hawks serves as Emergency Management Program Manager for the NNSA's Y-12 Site Office (YSO). Robinson is the emergency management team leader for DOE's Oak Ridge Office.



Scott Hawks

The award was presented to Hawks and Robinson at an Emergency Management Issues Special Interest Group meeting, held in Reston, Va.

This emergency group is a national DOE organization representing federal and contractor emergency management officials from throughout the DOE complex.

Hawks, who joined YSO in 2005, is responsible for all aspects of emergency management at the Y-12 National Security Complex. He also manages transportation and aviation safety. Previously, he was an employee of B&W Y-12 LLC and its predecessor contractor organizations. His primary duties included assessment and safety related activities associated with Y-12 production operations.

Robinson has served as team leader within emergency management at the Oak Ridge Office since 2005.