



In This Issue

NNSA Recovers 20,000 U.S. Radioactive Sources.....3

NNSA: Working to Prevent Nuclear Terrorism.....4

Nevada Test Site Team Successfully Completes Radiation-Detection Testing.....7

14,000 Nuclear Weapons-Worth of Russian HEU Eliminated

NNSA has monitored the elimination of over 14,000 nuclear weapons-worth of Russian highly enriched uranium (HEU) from dismantled nuclear weapons from Russia's stockpile and its conversion to peaceful use. The announcement comes as the NNSA and Russia conclude the fifteenth year of cooperation under an historic 20-year government-to-government nonproliferation agreement.

More than 350 metric tons (771,000 lbs.) of HEU from dismantled Soviet-era nuclear weapons has now been irreversibly and verifiably eliminated under the 1993 U.S.-Russia HEU Purchase Agreement. "NNSA and Russia

(continued on page 2)

NNSA Awards IBM Contract to Build Next Generation Supercomputer

NNSA has contracted with IBM to bring world-leading supercomputing systems to its Lawrence Livermore National Laboratory in California. The powerful new system will help continue to ensure the safety and reliability of the nation's aging nuclear deterrent.

"The longstanding partnership of NNSA, Lawrence Livermore National Laboratory, and IBM is ushering in an era of multi-petaflops computing," said NNSA Administrator Thomas D'Agostino. "These powerful machines will provide NNSA with the capabilities needed to

(continued on page 2)



PRESIDENTIAL ADDRESS TO DOE EMPLOYEES:

President Barack Obama listens as he is introduced by Secretary of Energy Steven Chu in the DOE main auditorium of the Forrestal Building in Washington, D.C., where he discussed his Administration's plans to create jobs, change the way energy is produced and used and ways to address the climate crisis.

HALLWAY CHAT: The President talks to the Secretary prior to the President's February 5th talk to DOE employees. A video of the event is available for viewing or download at <http://www.energy.gov/news2009/index.htm>.



NNSA Awards IBM Contract to Build Next Generation Supercomputer

(continued from page 1)

resolve time-urgent and complex scientific problems, ensuring the viability of the nation's nuclear deterrent into the future. This endeavor will also help maintain U.S. leadership in high performance computing and promote scientific discovery."

IBM will deliver two systems: Sequoia, a 20 petaflop (quadrillion floating operations per second) system based on future BlueGene technology, to be delivered starting in 2011 and deployed in 2012; and an initial delivery system called Dawn, a 500 teraflop (trillion floating operations per second) BlueGene/P system, scheduled for delivery in the first quarter of 2009. Dawn will provide the applications foundation for multi-petaflops computing on Sequoia.

With a speed of 20 petaflops Sequoia is expected to be the most

powerful supercomputer in the world and will be more than 10 times faster than today's most powerful system. To put this into perspective, if each of the 6.7 billion people on earth had a hand calculator and worked together on a calculation 24 hours per day, 365 days a year, it would take 320 years to do what Sequoia will do in one hour.

Sequoia and Dawn will serve NNSA's tri-lab Advanced Simulation and Computing (ASC) program, which unites the scientific computing resources and expertise of Los Alamos, Sandia and Lawrence Livermore national laboratories. The Sequoia systems will be focused on strengthening the foundations of predictive simulation through running very large suites of complex simulations called

uncertainty quantification studies. In addition, the machines will be used for weapons science calculations necessary to build more accurate physical models. This work is a cornerstone of NNSA's Stockpile Stewardship Program, which ensures the safety, security and reliability of the U.S. nuclear weapons stockpile today and into the future without underground testing.

Sequoia will have 1.6 petabytes of memory, 96 racks, 98,304 compute nodes, and 1.6 million cores. Though orders of magnitude more powerful than such predecessor systems as ASC Purple and BlueGene/L, Sequoia will be 160 times more power efficient than Purple and 17 times more efficient than BlueGene/L.

14,000 Nuclear Weapons-Worth of Russian HEU Eliminated

(continued from page 1)

have established a strong, technically-based partnership for the implementation of this important bilateral agreement and continue to bolster global security with every pound of excess weapons-origin HEU that is eliminated and rendered permanently safe from theft or unauthorized use," said Administrator Thomas D'Agostino.

The agreement requires the elimination of 500 metric tons of weapons-derived Russian HEU through conversion to fuel for U.S. commercial power reactors by the conclusion of the agreement in 2013.

The Office of Nonproliferation and International Security conducts an overall assessment of Russian HEU conversion and downblending activities through 24 Special Monitoring Visits (SMVs) per year to four Russian facilities. Through the implementation of reciprocal confidence-building transparency measures, the agreement tangibly reduces the nuclear risk by ensuring that the nonproliferation objectives are met.

To date, 258 SMVs have been conducted to monitor the Russian uranium processing firsthand, with U.S. experts monitoring the elimination of 30 metric tons, or approximately 1,200 nuclear weapons-worth, each year. The Russian Federation also conducts monitoring activities at U.S. facilities to ensure peaceful use.



DOWNBLENDING EXPERTISE: A U.S. expert observes as highly enriched uranium metal is converted to oxide.

GETTING THE JOB DONE: The Los Alamos Site Office, Los Alamos, N.M., hosted the Quarterly Site Managers' meeting January 8-9, 2009. The managers discussed a diverse agenda of topics and committed to getting the job done. The site managers also toured several facilities at the Los Alamos National Laboratory. Meeting attendees pictured are (back row from left): Michael Thompson (HQ presenter), Gerald Talbot (HQ), Steve Taylor (Kansas City Site Office), Steve Erhart (Pantex Site Office), Doug Wade (HQ presenter), Theodore Sherry (Y-12 Site Office), and Donald Winchell (Los Alamos Site Office). Front row from left: Deborah Monette (HQ presenter), Patty Wagner (Sandia Site Office), Karen Boardman (Service Center), Kim Davis (Sandia Site Office), Alice Williams (Lawrence Livermore Site Office), Stephen Mellington (Nevada Site Office), Efren Garcia (HQ - executive officer), Douglas J. Dearolph (Savannah River Site Office), and James McConnell (HQ presenter). Not pictured is Linda Wilbanks (HQ presenter).



NNSA Recovers 20,000 U.S. Radioactive Sources

NNSA has reached a major milestone in threat reduction, recovering over 20,000 excess and unwanted sealed radioactive sources in the United States. These sources are made from plutonium, cesium, americium, cobalt, strontium, and other radioactive materials.

"This major achievement in the removal of these radioactive sources ends any threat that they could be used in a dirty bomb," said NNSA Administrator Thomas D'Agostino. "NNSA's continued progress illustrates our comprehensive strategy to keep dangerous nuclear and radiological material safe and secure."

NNSA uses its Los Alamos National Laboratory in New Mexico, the Department of Energy's Idaho National Laboratory and contracts with the

Conference of Radiation Control Program Directors and three small business firms to recover radioactive sources from commercial firms and academic institutions after the sources are determined to be excess and unwanted, and when there is no other disposition path.

NNSA's Global Threat Reduction Initiative (GTRI), responsible for the source recovery program, works around the United States to remove and securely manage radioactive materials that could be at risk for theft or diversion for use in a radiological dispersal device, or dirty bomb. Since 1997, the program has secured more than 20,000 radioactive sources from around the country.

GTRI also works to secure and recover orphaned sources internationally.



ION BEAM LAB: Ground was recently broken for the construction of a new Ion Beam Laboratory (IBL) at Sandia National Laboratories in Albuquerque, N.M. The list of research targets for the IBL is extensive. Research areas include certification of tritium content in neutron tube targets, microscopic diagnostics of radiation sensitivity of integrated circuits, simulating the effects of the enormous fluxes of neutrons associated with nuclear detonations, and other calibrations and certifications for the nuclear stockpile. The new facility will replace a building erected in 1956. The unique structure will contain six accelerator systems to generate heavy and light ions ranging from one electron volt to 400 million electron volts.

NNSA: Working To Prevent

The National Nuclear Security Administration has unique expertise in nuclear weapons and nuclear material and plays a key role in the U.S. government's comprehensive effort to combat terrorism. Since the 9/11 terrorist attacks, NNSA has more than doubled spending on nuclear nonproliferation programs. NNSA works with over 100 countries to fight against nuclear proliferation and terrorism. Examples of this expertise are listed below. The entire fact sheet is available at http://www.nnsa.energy.gov/news/fact_sheets.htm.

Secured Nuclear Material and Warheads

- As of December 31, 2008, completed security upgrades at 73 Russian nuclear warhead sites containing hundreds of warheads, including 39 Russian Navy nuclear sites, 25 Russian Strategic Rocket Forces sites, and nine 12th Main Directorate sites.
- Completed Material, Protection, Control & Accounting (MPC&A) upgrades to 180 buildings containing hundreds of metric tons of weapons-useable Russian nuclear material at 11 Russian Navy reactor fuel sites, seven Rosatom Weapons Complex sites, six civilian (non-Rosatom) sites, and 12 Rosatom civilian sites.
- Completed the largest U.S.-Russian effort to secure weapons-grade nuclear material at the Mayak Production Association in Ozersk, Russia.
- Completed MPC&A upgrades to 15 nuclear material buildings outside of Russia.
- Returned 765 kilograms (enough for over 30 nuclear weapons) of Soviet-origin highly enriched uranium (HEU) from vulnerable sites around the world.
- Returned 1,200 kilograms (enough for over 45 nuclear weapons) of U.S.-origin HEU.
- Removed 146 kilograms (enough for over five nuclear weapons) of other HEU and plutonium from vulnerable sites around the world.
- Helped to eliminate Libya's nuclear weapons program by removing 1.8 metric tons of uranium hexafluoride and over 500 metric tons of centrifuge components and related materials.



Protected "Dirty Bomb" Material

- Recovered more than 20,300 radioactive sources in the United States.
- Upgraded the physical security at 537 buildings around the world that contained vulnerable, high-risk nuclear and radioactive material.
- Removed or disposed of 423 Russian radioisotopic thermal generators in a joint effort with Russia, Canada, Norway, France and Finland.
- Repacked and removed 550 metric tons of uranium and 4,000 curies of radiological sources from the Tuwaitha Nuclear Research Complex in Iraq.

Safeguarded Research Reactors

- Converted 57 research reactors around the world from operating on HEU to running on low enriched uranium (LEU).
- Shut down, prior to conversion, six HEU civilian research reactors.
- Provided security upgrades at 18 civilian research reactors worldwide.



DETECTION TECHNOLOGY
radioactive material at Ky

Countering Nuclear Terrorism

COMBATTING

TERRORISM: NNSA provides Commodity Identification Training (CIT) to customs and other border enforcement officials from roughly 40 countries. This training will teach officials to recognize dual-use, WMD-related goods. Pictured is a Ukrainian CIT inspector presenting a photomultiplier tube to an audience of customs inspectors.



Prevented Nuclear Smuggling and Transfer of Nuclear Expertise

- Emphasized long-term research efforts to develop improved technologies to detect weapons of mass destruction and nuclear proliferation around the world.
- Completed Megaports radiation detection equipment installation at 19 ports and at various stages of implementation at more than 20 additional ports around the world.
- Installed radiation detection equipment at 213 Second Line of Defense Core sites (land border crossings, airports, and sea ports) in Russia and six other countries of concern.

Downblended or Disposed of Nuclear Material

- Converted into LEU 11.1 metric tons of Russian excess non-weapons program HEU.
- Monitored the downblending of 352 metric tons (enough for 14,000 nuclear weapons) of Russian weapons-derived HEU, which now provides 10 percent of U.S. electricity.
- Downblended 105 metric tons (enough for approximately 2,305 nuclear weapons) of surplus U.S. HEU into LEU for peaceful use as nuclear reactor fuel, with an additional 13 metric tons packaged and shipped for downblending (a total of 118 metric tons).
- Initiated downblending of the 17.4 metric tons of HEU for the Reliable Fuel Supply Initiative, which will be used as an incentive to other countries to forego their own enrichment and reprocessing capabilities.
- Worked to dispose of at least 68 metric tons (enough for 8,500 nuclear weapons) of U.S. and Russian weapons-grade plutonium by converting it into mixed-oxide fuel for commercial nuclear power reactors. Construction continues on the U.S. Mixed Oxide Fuel Fabrication Facility.

Maintained Leading Emergency Response Capabilities and Training

NNSA has robust emergency capabilities with some of the world's top professional scientists, engineers, pilots, medical personnel, technicians, and other leading nuclear experts. Using extremely sophisticated laboratories and equipment, NNSA teams are ready to respond to and resolve nuclear and radiological terrorist incidents, including supporting other government agencies, and deploying search, analysis and medical teams.

- NNSA participated in 76 national and international exercises in 2008 to maintain its elite response standards.
- Deployed multiple field teams to conduct 34 high profile special events and 47 emergency responses around the world in support of the Department of Homeland Security, Federal Bureau of Investigation and Department of State.
- Worked with emergency response organizations in over 60 countries and nine international organizations to address potential radiological emergencies and nuclear incidents. The international cooperation involves technical exchanges, mutual training events, jointly conducted exercises, and emergency management assistance.



TECHNOLOGIES: Ukrainian border guard tests for...
Kyiv's Borispol Airport.

Department of Energy's Moscow and Beijing Offices Change Leadership

Several important transitions in the leadership of the Department of Energy's overseas offices have taken place.

James "Mark" Whitney ended a very successful three-and-a-half year tour (2005 - 2008), in December, as the executive director of the DOE Office at the U.S. Embassy in Moscow. In

addition to other successes representing the Secretary and the Department, Mr. Whitney and his staff were instrumental in significantly improving U.S.,

Russian and international security under the U.S.-Russian Bratislava Initiative on Nuclear Security Upgrades. A career member of the Senior Executive Service (SES), and recipient of the NNSA "Silver Award" for his work in Moscow, Mr. Whitney returns to serve as the associate assistant deputy administrator for the Office of Nonproliferation and International Security Policy.

Christine Buzzard, a former Fellow in the Nonproliferation Graduate Program, was recently approved by the Office of Personnel Management as an SES to return as the executive director of the Moscow office. Ms. Buzzard returns to familiar surroundings as she served previously in Moscow (1999 - 2005) in several positions, including deputy director and acting office director for a prolonged period. Ms. Buzzard has recently supported the Second Line of Defense program as a

contract employee of Pacific Northwest National Laboratory.

At the U.S. Embassy in Beijing, China, Dr. Marco Di Capua is concluding a three-year tour in which he helped advance the Energy Policy Dialogue, nuclear nonproliferation efforts, and the Westinghouse nuclear reactor deal. As the first

language, and regional affairs courses.

DOE currently has more than 40 employees (20 federal and 21 Foreign Service National employees) in nine countries representing the Secretary of Energy and the Department overseas. The offices at the U.S. Embassies in Moscow, Russia,

DOE currently has more than 40 employees in nine countries representing the Secretary of Energy and the Department overseas. All are managed and supported by the Office of International Operations within NNSA's Office of Defense Nuclear Nonproliferation.

permanent executive director in China, he also helped expand the office and worked on obtaining permission from the State Department to remain in China. Dr. Di Capua will return to headquarters and become the chief scientist in the Office of Nonproliferation Research and Development.

Replacing Dr. Di Capua in China is Martin Schoenbauer. A retired U.S. naval officer and career SES, Mr. Schoenbauer previously served as the acting deputy administrator for Defense Programs. He was awarded the Presidential Rank Award and Administrator D'Agostino also presented Mr. Schoenbauer with the NNSA Gold Award in recognition of his long service to NNSA Defense Programs. For the past eight months, Mr. Schoenbauer has been taking courses associated with energy development and production, international policy, Chinese

and Beijing, China, are the largest of these offices. Other personnel are stationed in Vienna (Austria), Tokyo (Japan), Paris (France), Kyiv (Ukraine), Islamabad (Pakistan), Astana (Kazakhstan), Baku (Azerbaijan), Tbilisi (Georgia) and Baghdad (Iraq).

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Nevada Test Site Team Successfully Completes Radiation-Detection Testing

A team made up of the Department of Homeland Security Domestic Nuclear Detection Office (DNDO), National Security Technologies and Wackenhut Services, Inc. subcontractors have been recognized for their efforts in successfully completing a test campaign designed to detect radiation in moving vehicles.

The mission was to gather critical data of the Advanced Spectroscopic Portal (ASP) during the campaign, which accomplished all of its required test scenarios. These ASPs are cutting-edge radiation detection systems being tested at the Nevada Test Site for the U.S. Department of Homeland Security DNDO.

Defending America's ports from terrorist activities involving radioactive material is the driving force behind the ASP test team. The campaign was designed to determine which portal system does the best job at finding illegal radioactive material.

An ASP system consists of two portals positioned on either side of the street and directly parallel to each other. When an 18-wheel semi-truck drives between two ASP units, it is not apparent anything is happening - there are no lights flashing or buzzing sounds, just the sound of the tires against the asphalt. In reality, a semi-truck carrying any type of radiological material would have been detected by the ASP system, which would have identified the material and sent an alarm to the system operator.

To collect the data required for analysis, the ASP test campaign consisted of three separate phases. The first phase was the data collection effort. Specific radioactive sources were passed through the ASP systems in varying configurations to

establish the baseline for the testing. The second phase required the development and use of shipping containers with specific amounts of shielding and masking material. The third and final phase was the performance testing of the ASP systems.



CUTTING EDGE TESTING: A truck drives between Advanced Spectroscopic Portals during testing at the Nevada Test Site.

"This is the best testing I've ever seen, anywhere," said Vayl Oxford, director of DNDO. "The test team facilitated quick data analysis and validation, taking just 10 days to complete. In the past, data analysis had taken weeks, if not months."

OST FLAG RAISING:

DOE/NNSA and Office of Secure Transportation (OST) officials conducted a ribbon cutting and flag raising ceremony to commemorate the opening of the new OST facility at the Pantex site in Amarillo, Texas.



RIBBONCUTTING: OST and Pantex Site Office officials cut the ribbon during the new OST facility dedication.

Kansas City Plant Employees Receive American Red Cross Award

The American Red Cross gave two of its highest national awards, the National Certificate of Merit and the Lifesaving Award for the Professional Responder, to five Kansas City Plant employees in a recent ceremony in Kansas City, Mo.

In April 2008, Steve Prewitt, Pamela Soloman, Mindy Berry, Bill Cochran, and John Allen saved the life of a co-worker who was found face down on the floor, unconscious and not breathing.

The five men and women performed CPR and used an automated external defibrillator on their co-worker to keep his heart pumping and get him breathing again until the Kansas City Fire Department and an ambulance could arrive. The employee recovered.

"This is the ultimate example of our culture of safety interventions and caring for one another," said Bob Jensen, Honeywell FM&T vice president. "We're grateful their swift actions averted what could have been a tragedy."

Prewitt, Soloman and Berry received the National Certificate of Merit which also includes a citation and medal. The award is signed by the President of the United States, the Honorary Chairman of the American Red Cross.

Cochran and Allen received the Lifesaving Award for the Professional Responder because of their professional duty to respond.



SAVING LIVES: Kansas City Plant employees (from left) Steve Prewitt, Mindy Berry and Pamela Soloman were honored by the American Red Cross for their life-saving actions.

