



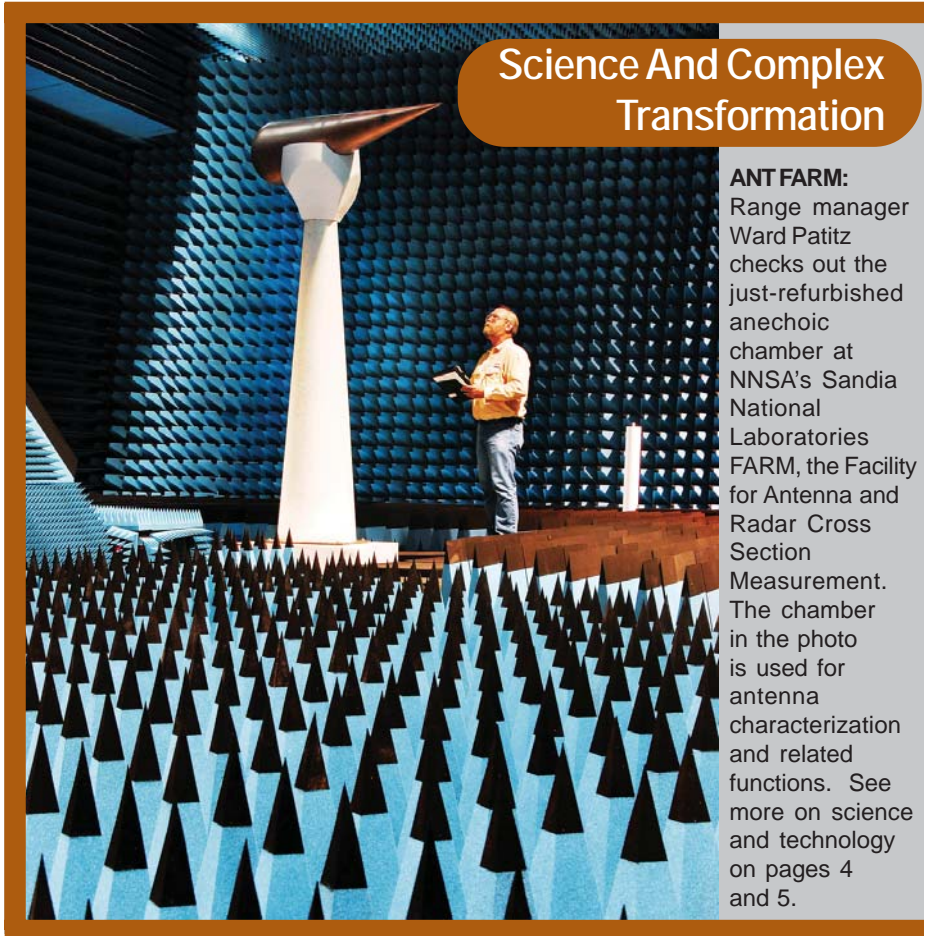
Consolidation Of Nuclear Weapons Material Continues

Another shipment of nuclear weapons-grade plutonium has been removed from NNSA's Lawrence Livermore National Laboratory (LLNL) in California and placed under high security at the Savannah River Site (SRS) in South Carolina.

The shipment is part of an accelerated effort to remove nuclear material from LLNL by 2012 - two years earlier than planned when the first shipment of plutonium left LLNL in late 2006. Similar actions are underway at other nuclear weapons complex sites, including the removal of weapons-grade materials from Sandia National Laboratories in New Mexico.

"There is too much nuclear material stored at too many different sites around the country," said NNSA Administrator Thomas D'Agostino. "One of my top priorities has been to speed up the consolidation of NNSA's material and we are doing that. Our consolidation efforts will reduce

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Science And Complex Transformation

ANT FARM: Range manager Ward Patitz checks out the just-refurbished anechoic chamber at NNSA's Sandia National Laboratories FARM, the Facility for Antenna and Radar Cross Section Measurement. The chamber in the photo is used for antenna characterization and related functions. See more on science and technology on pages 4 and 5.

Plutonium Elimination Project Reaches Major Milestone

The first new boiler and turbine of a fossil fuel power plant being refurbished by NNSA is up and running in Seversk, Siberia, marking a major milestone in a nonproliferation project to shut down two weapons-grade plutonium production reactors in Russia.

"This is an important milestone in a key international nonproliferation project," said William Tobey, NNSA's deputy administrator for nuclear nonproliferation issues. "With boiler and turbine components operational, we have turned the corner from construction to operation. This is a significant step toward shutting down the reactors and effectively eliminating the production of 800 kilograms of weapons-grade plutonium per year."

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Consolidation Of Nuclear Weapons Materials Continues

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security costs and are an integral part of transforming the U.S. nuclear weapons complex to one that is smaller, safer, more secure, and more efficient."

As part of D'Agostino's recently announced vision of the future U.S. nuclear weapons complex, NNSA plans to consolidate nuclear materials at five sites by 2012, with significantly reduced square footage at those sites by 2017. This will further improve security and reduce security costs, and is part of D'Agostino's overall effort to transform the Cold War era nuclear weapons complex into a 21st century nuclear security enterprise.

The shipment was completed in full compliance with existing safety and environmental laws and procedures, and is in line with the September 5, 2007, decision made by the Department of Energy to consolidate surplus non-pit plutonium at SRS. The plan is to turn excess plutonium into fuel at the Mixed Oxide (MOX) Fuel Fabrication Facility. MOX facility construction began August 1, 2007, and the total project is now 25 percent complete.

Plutonium Elimination Project Reaches Major Milestone

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NNSA's project is scheduled to be completed by December 2008. The fossil fuel power plant will provide heat and electricity so that two of the three remaining Russian reactors producing weapons-grade plutonium can be shut down. The reactors originally began operation in the mid-1960s to produce weapons material, while providing the necessary heat and electricity to the city of Seversk.

In addition to the project in Seversk, NNSA is also constructing a fossil-fuel plant to provide replacement heat and power for the city of Zheleznogorsk so the last Russian weapons-grade plutonium production reactor can be shut down by December 2010.

Both projects are part of the NNSA's Office of Nuclear Risk Reduction, which works to reduce weapons-grade materials throughout the world.

New Tool Helps Y-12 Troubleshoot Manufacturing Problems

An advanced tool is in place at NNSA's Y-12 National Security Complex to better understand and analyze complex chemical processes associated with NNSA's mission to maintain the safety and reliability of the nation's nuclear weapons stockpile.

The new tool, an advanced nuclear magnetic resonance (NMR) spectrometer, was installed recently at the Oak Ridge facility. The instrument will enhance NNSA scientists' and engineers' understanding of the chemistry of unique chemical production processes. It will also enable officials to troubleshoot manufacturing problems more effectively.

With the new NMR, staff can see fine details of molecular structure. A sample is placed into an ultra-high magnetic field created by the NMR magnet. Once in the magnetic field, atoms in the molecule interact with the field, creating an energy that can be detected. "Replacing old analytical equipment is just another part of our modernization strategy at Y-12," said Ted Sherry, manager of the Y-12 Site Office.

Gerald DeVault of Y-12's Uranium Center of Excellence said, "Through observing and measuring this energy, Y-12 staff can determine the molecule's structure and how it interacts with other molecules. This is critical to understanding the chemistry involved in production processes. With this understanding, Y-12 will be able to sustain production over the lifetime of a program."

The Uranium Center of Excellence extends Y-12's internal expertise through work with partners and collaborators to develop nuclear innovations and manufacturing and operating capabilities. The project is one of the fastest deployments of technology in the program's recent history.

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Video Game Will Help Train Soldiers

Twenty thousand soldiers a year may soon be trained in interpersonal skill building and cross-cultural awareness using a video game recently developed by researchers from NNSA's Sandia National Laboratories in New Mexico and BBN Technologies.

Funded through the Defense Advanced Research Projects Agency (DARPA), the nine-month project resulted in the instantiation of Sandia's adaptive thinking training methodology that prepares warfighters for difficult situations in places such as Afghanistan and Iraq, said project lead and scientist Elaine Raybourn.

"We are talking about training for nonkinetic engagement - interpersonal communication, negotiation skills, and interpersonal rapport," she said. "The goal is to make soldiers better thinkers and communicators under stress."

Raybourn and her team recently delivered DARPA's "DARWARS Ambush NK!" to the Program Executive Office for Simulation, Training, and Instrumentation, which will distribute the enhanced system to the Army and eventually the other

armed forces.

The training tool is conceptually similar to an earlier multiplayer simulation game she developed several years ago. That same game is currently used by members of the U.S. Army Special Forces to hone their skills in adaptive thinking,

scenarios, monitor training, and change the direction of the game at any time.

Participants serve as either role-players or evaluators. Their tasks and experiences vary according to their role.

The nonkinetic modules are comprised of a socio-cultural overlay for a geographical area that is linked to key events and roles of host nation civilians.

Raybourn said creating a serious game is "truly a collaborative effort that often involves pulling together a distributed, virtual team of industry, military and government partners, just to name a few."

Game design teams often represent

diverse cultural orientations and face the same communication challenges encountered by trainees. "We hope this training will help soldiers better understand the cultural environments they are exposed to and better handle difficult situations," Raybourn said.



TRAINING SOLDIERS: A user tests the new interpersonal skill building and cross-cultural awareness video game technology developed by Sandia National Laboratories researchers. The video game is an adaptive thinking training methodology that prepares soldiers for difficult situations.

negotiation, conflict resolution, and leadership in cross-cultural settings. The Special Forces' game is being used to train soldiers on a regular basis at Ft. Bragg in North Carolina.

As in the first, the new game developed for DARPA will allow as many as 64 people to play on networked computers. Instructors can easily modify or create

NNSA'S Science And Technology Of Nuclear Deterrence

In his State of the Union address, President Bush said, "To keep America competitive into the future, we must trust in the skill of our scientists and engineers and empower them to pursue the breakthroughs of tomorrow." The scientific innovation that the President was talking about is fundamentally important not only to the nation's economic well-being, but also to promoting its national security. NNSA's science, technology and engineering efforts are at the core of what continues to keep the U.S. safe in an ever-changing world.

New challenges have arisen in the post-Cold War era. After the fall of the Soviet Union, national security needs are even less predictable than they were before,

and more creativity is needed to meet these needs. In these days of declining budgets government-wide, NNSA must be prepared to do more with less.

This is especially true as the aging stockpile becomes more and more costly to maintain without the ability to rely on underground nuclear testing.

To meet the challenges of the 21st century, NNSA

Administrator Thomas D'Agostino has begun important transformation efforts for the nuclear weapons complex. Yet transformation involves more than just buildings. As part of Complex Transformation, as it is known, Administrator D'Agostino is re-examining the vision and mission of NNSA and its laboratories. Over the next several years, the laboratories will maintain and strengthen their capabilities for developing

"It is important to preserve intellectual competition and robust and rigorous peer review throughout the transformation process."

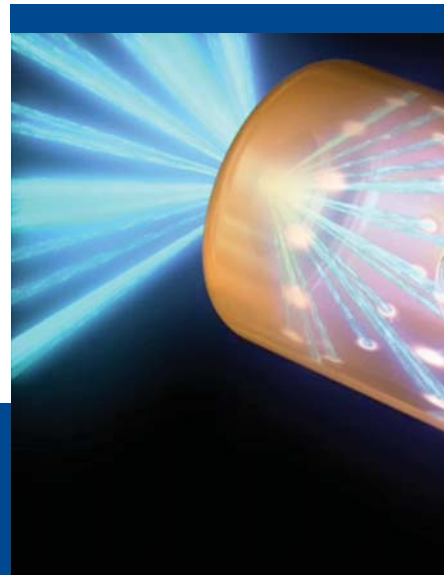
**Thomas D'Agostino
NNSA Administrator**

DIGITAL SIMULATION:

Developed at NNSA's Los Alamos National Laboratory, the "Cave," as it is known, is one of the highest resolution visualization spaces in the world. It links 33 stereoscopic digital projectors to provide a 43-million-pixel display on and within three walls and the floor and ceiling. The Cave is used in advanced research projects including nuclear weapons simulations in an environment that is 15 feet wide by 10 feet deep and 12 feet high.



LOOMIS TARGET: This animation simulates the 192 beams converging upon a BB-sized fuel pellet within a NIF target. NIF experiments are a part of NNSA's stockpile stewardship program, to ensure the safety and reliability of the nuclear weapons stockpile.



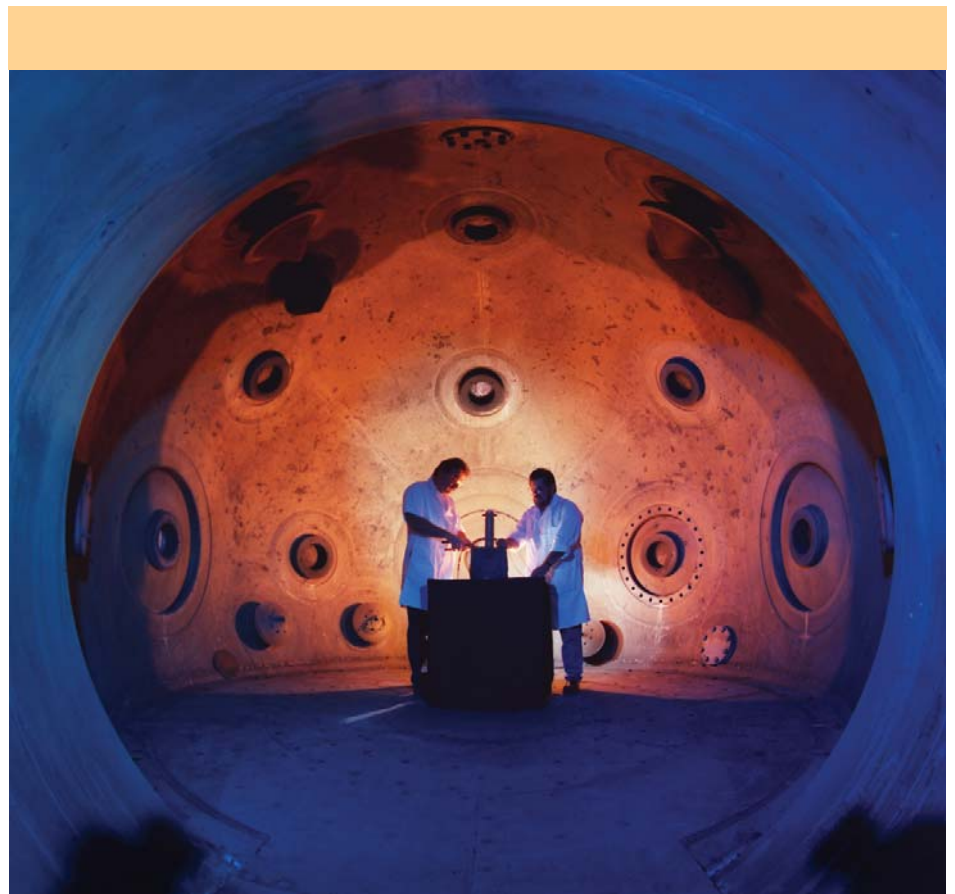
Technology Base - The Cornerstone of Excellence And Long-term Security



solutions to large, complex problems that challenge U.S. national security. Joint efforts with other agencies are being actively considered even more as NNSA looks to form partnerships with other offices in the Department of Energy and other agencies.

As Administrator D'Agostino has said, it is important to preserve intellectual competition and robust and rigorous peer review throughout the transformation process. His vision is that the nuclear weapons complex of the future should have an integrated and interdependent set of laboratories and manufacturing plants that apply leading-edge science and technology to maintain nuclear security capabilities to support U.S. national security.

This broader national-security role for NNSA and its laboratories will ensure continuity and stability for their core nuclear-deterrent mission as they evolve to provide the nation a critical advantage in meeting 21st century national security challenges.



ADVANCED TECHNOLOGY: At the Lawrence Livermore National Laboratory High Explosives Application Facility, or HEAF, teams of scientists, engineers and technicians address nearly all aspects of high explosives: research, development and testing; material characterization; and performance and safety tests.

NNSA Partners With Nations To Secure Seaports

Cooperative work between NNSA and the nations of Singapore, Cyprus and Israel will enhance existing efforts to scan U.S.-bound cargo from the Port of Singapore, upgrade the portal monitor at Limassol seaport in Cyprus and initiate operation of radiation detection equipment at Haifa Port, one of Israel's busiest seaports.

"NNSA provides the means for screening more and more cargo to prevent nuclear materials or devices from being smuggled into the United States and ports around the world," said NNSA Deputy Administrator for Defense Nuclear Nonproliferation William Tobey. "We continue to build on our international partnerships to do so."

NNSA will provide radiation detection equipment for Singapore and associated infrastructure and training for the U.S. Department of Homeland Security's Customs and Border Protection (CBP) and Singapore officials.

The announcement establishes

the U.S. government's Secure Freight Initiative (SFI) in the Brani Terminal at the Port of Singapore. The initiative, which is aimed at keeping dangerous, smuggled material out of U.S.-bound cargo, is a joint effort implemented overseas between NNSA, CBP and the Department of State.

Ports in Hong Kong, South Korea, and Oman are also implementing SFI in a limited, pilot capacity. The results of the four pilot projects will be used to provide guidance on future expansions of SFI, and to help the U.S. determine the impact of radiation and non-intrusive imaging scanning at large ports.

A joint ceremony was held recently with the Cypriot Customs Service and the U.S. Embassy to highlight the installation and operation of the radiation detection equipment provided to Cyprus by NNSA. Since 2004, NNSA's Second Line of Defense (SLD) program has assisted the Cyprus Customs Service in maintaining radiation detection equipment by

providing new equipment and training that improves detection of nuclear and radioactive material in cargo at the port. NNSA's SLD program provides detection systems around the world to help combat nuclear proliferation and terrorism.

NNSA procured radiation detection equipment, developed a communications system, and helped to train Haifa Port Company (HPC) officials in Israel on operation and maintenance of a system to deter, detect and interdict illicit shipments of special nuclear and other radioactive materials.

Under a cost-sharing arrangement between the Israel Atomic Energy Commission (IAEC) and the Israel Port Company (IPC) the IPC funded the design, installation, integration and long-term maintenance of the radiation detection equipment; the HPC will operate the detection equipment; and the IAEC will assist with long-term training efforts and equipment maintenance.



GETTING THE JOB DONE : The last of four shipments of sodium debris material from Sandia National Laboratories/New Mexico (SNL/NM) was completed in January. This is a significant part of NNSA's efforts to remove high-security special nuclear material from SNL/NM. The Sandia Site Office and SNL/NM coordinated with numerous other organizations including the Office of Secure Transportation, Idaho National Laboratory, Argonne National Laboratory, and the Nuclear Assurance Corporation. The shipments were completed using the Nuclear Assurance Corporation's Legal Weight Truck cask.

Y-12 Uranium Storage Project Celebrates Milestones

The uranium storage facility project at the Y-12 National Security Complex in Oak Ridge, Tenn., recently celebrated a significant safety milestone marking more than one million hours worked over an 18 month period without a lost-time injury.

The project also reached a major construction milestone when the final concrete pours that will complete the placement of the roof of the facility began.

The accident-free million hours stretched from April 2006 through September 2007.

Workers from Caddell-Blaine Joint Venture, the prime contractor, project subcontractors and BWXT Y-12 construction recently celebrated the safety and construction accomplishments.

Scott Cannon, NNSA federal project director for the Highly Enriched Uranium Materials Facility (HEUMF), said, "I want to express my appreciation to the workers for accomplishing these major milestones. There is nothing more important than working safely each day. We want every worker on this project returning home to their families each day, safe and sound."

Dorman Blaine, president of Blaine Construction called the HEUMF construction a "challenging, complex project."

"To achieve a million hours of injury-free work is significant," he said. "We have three safety professionals on this project. It's a heavy concrete project with many people working on the site. We spend a great deal of time with housekeeping to reduce trip hazards and prevent falls. There's a lot of elevated work using cranes and rigging that requires a significant amount of attention."

Y-12 stores the majority of the nation's inventory of highly enriched uranium (HEU). The HEUMF is a key component in the site's modernization plans, and it will replace multiple aging facilities and allow storage of HEU in one central location, resulting in enhanced physical security and reduced operating costs.

Starting the final roof placements is also significant because it marks one of the final steps toward the major construction milestone of topping out the facility. The new storage facility is now more than 65 percent complete with construction scheduled to be completed by August 2008.



SITE MODERNIZATION: Concrete from a mixer truck is emptied onto the conveyor of a concrete pump direct to the roof of the Highly Enriched Uranium Materials Facility.

United States And China Cooperate On Nuclear Emergency Response

American and Chinese experts shared nuclear emergency response capabilities with multiple countries during a recent Global Initiative to Combat Nuclear Terrorism Radiation Emergency Response Workshop in Beijing, China. The goal of the workshop was to demonstrate the best ways countries can both prevent and respond to acts of nuclear terrorism.

NNSA worked with the China Atomic Energy Authority (CAEA) to conduct briefings on U.S. emergency response capabilities, and to exchange some best practices among the other participating countries. Fifty-five representatives from 15 countries attended the

workshop. Field exercises were also held, where many search techniques and other capabilities were demonstrated.

"This was a great opportunity for the United States, China, and many other countries to learn from each other the best ways to respond to a possible nuclear terrorist attack," said NNSA Associate Administrator for Emergency Operations Joseph J. Krol. "It is always reassuring to see how many different countries are a part of the global war on terror."

The Radiation Emergency Response Workshop is a nuclear and radiological terrorism response capabilities demonstration that supports the Global Initiative to Combat

Nuclear Terrorism. The workshop was designed to improve the capabilities of participants to deal with nuclear or radiological devices, and the way to respond in the event of a nuclear or radiological incident.

"It is always reassuring to see how many different countries are a part of the global war on terror."
Joseph J. Krol
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Emergency Operations



Facility Management At Nevada Test Site To Change

Since the early 1990s management and operation (M&O) activities at the Nevada Test Site (NTS) have been contracted by the federal government to a single contractor that has been responsible for the day-to-day operations of everything from housing services, road maintenance, mining, and scientific support to the national laboratories in the fielding of diagnostics for experimental programs.

In a few cases, however, NNSA's Los Alamos and Lawrence Livermore national laboratories have had the responsibility for the management and operation of a

number of facilities at NTS. The list includes the Device Assembly Facility, the U1a/h underground complex, the Big Explosive Experimental Facility, and the Joint Actinide Shock Physics Experimental Research facility.

In a move to better manage safety, security, compliance, and operating procedures of NTS facilities, the management and operations of all facilities has been delegated to the current site M&O contractor, National Security Technologies, LLC.

Transition from management by the two national labs to the site contractor is expected to be completed by September of 2008.

"We will have an integrated

and uniform application of operational standards and practices as a result of this transition. In addition, we will gain consistency in the formality of operations and uniform line oversight. This allows the Nevada Site Office one seamless way of doing business within all test site facilities," stated Nevada Site Office Manager Gerald L. Talbot, Jr.

He said that with one common facility manager using a consistent set of requirements, a number of efficiencies are expected to be gained in the management and operation of NTS.