



## NNSA Increases Security In A Post-9/11 World

Since the 9/11 terrorist attacks, NNSA has taken great strides in protecting its eight sites in the nuclear weapons complex from surprise enemy attacks. Whether through consolidation efforts of special nuclear material, increased hiring and training of protective forces, or adding a combination of low and high technology security measures, NNSA is able to sustain some of the most secure facilities in the world.

NNSA has consolidated the number of locations where special nuclear material is stored and has "hardened," or strengthened, its material storage vaults. These precautions help to eliminate the threat of enemy access to a nuclear weapon or large stores of special nuclear material.

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**D'AGOSTINO TAKES OATH:** Department of Energy Secretary Samuel Bodman swears in Thomas P. D'Agostino as under secretary for nuclear security and administrator of NNSA as D'Agostino's wife Beth observes. He was nominated by the President in May and confirmed by the Senate in August.

## Thomas P. D'Agostino Sworn In As NNSA Administrator

U.S. Department of Energy Secretary Samuel W. Bodman recently administered the oath of office to Thomas P. D'Agostino to be the third under secretary for nuclear security and administrator of NNSA.

"I applaud the Senate's quick action to confirm Tom D'Agostino as administrator of NNSA," Secretary Bodman said. "Tom brings institutional knowledge of the weapons complex and firsthand experience in leading our defense programs to his new position. I am pleased to have him on my senior leadership team as we work to further President Bush's energy and national security agenda and advance critical nonproliferation goals."

D'Agostino was nominated by President Bush on May 17, 2007, and confirmed by the U.S. Senate on August 1, 2007. He joined the department in 1991 and most recently served as NNSA's deputy administrator for defense programs.

"I am honored by the opportunity to serve the President and

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## D'Agostino Sworn In As NNSA Administrator

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Secretary Bodman as NNSA administrator," D'Agostino said. "I look forward to fulfilling the President's vision of a smaller stockpile, transforming the country's weapons complex, and continuing to lead the world in combating the spread of nuclear weapons and material around the globe."

### NNSA's Vision Of The Future Complex

**A smaller, safer and less expensive complex that leverages the scientific and technical capabilities of NNSA's workforce, meets today's national security requirements, and is responsive to tomorrow's needs.**

D'Agostino has more than 29 years of military service in the United States Navy, retiring with the rank of captain from the Naval Reserves. He received his bachelor's degree from the U.S. Naval Academy and his master's degrees from Johns Hopkins University and the Naval War College.

### Administrator's Six Focus Areas For The Future:

- Ensure the overall effectiveness of the interface between federal oversight and contractor assurance systems for nuclear safety, physical and cyber security;
- Continue working on the planning and transformation of the nuclear weapons stockpile and the nuclear weapons complex;
- Reenergize the NNSA nuclear material consolidation and disposition effort;
- Develop and articulate NNSA's "Vision for the Future" for the integrated roles and missions of the nuclear weapons complex;
- Integrate project management best practices throughout NNSA; and
- Make NNSA the "Employer of Choice."

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Additional armed security police officers with more extensive training have been hired for added protection. NNSA has slowly shifted towards a paramilitary, "tactical response force" that utilizes a robust mix of offensive and defensive qualified officers who are trained in small team weapons tactics. Also, security police officers are equipped with armored vehicles, heavier caliber weapons, and ballistically protected fighting positions, which will increase the survivability of the forces.

NNSA has also implemented several different "force multipliers" at sites, including highly specialized technology and equipment that will help security police officers gain even more tactical control over wider areas. Low-technology, physical security measures, such as concrete blocks, razor-wire barriers, and steel-plated fighting positions, are used to upgrade security at the different sites, as required

By taking additional protective measures to update the nuclear weapons complex in a post-9/11 world, NNSA is working towards its mission of not only keeping the U.S. nuclear stockpile safe and reliable, but secure as well.



**CAPITOL HILL BOOTH:** Karen Pao and Ken Alvin of NNSA's Office of Advanced Simulation and Computing staff an exhibit at the second annual modeling and simulation exhibition on Capitol Hill in Washington, D.C. A recent House resolution formally recognized the contribution of computer modeling and simulation to the nation's economic prosperity and national security.

**MESA DEDICATION:**  
 U.S. Senator Pete Domenici (far left) and Department of Energy Deputy Secretary Clay Sell were among the speakers at the recent ceremony marking completion of the \$518 million Microsystems and Engineering Sciences Applications (MESA) project at NNSA's Sandia National Laboratories in Albuquerque, N.M. Also unveiled was a seven-foot-tall bronze statue of retired Sandia engineer Willis Whitfield (right), inventor of the "clean



room" technology that made modern microelectronics production - and therefore MESA itself - possible. Whitfield's invention has also made hospital surgery rooms safer. The 400,000-square-foot MESA complex was completed in eight years - three years ahead of schedule - and \$40 million under budget. It consists of three discrete buildings: the Microelectronics Development Laboratory and MicroFab, the Microsystems Laboratory, and the Weapons Integration Facility.

## Los Alamos National Laboratory Researcher Awarded Bronze Star For Service In Iraq

U.S. Army Sergeant First Class Tod Caldwell, a postdoctoral researcher at NNSA's Los Alamos National Laboratory (LANL), has been awarded the Bronze Star Medal for meritorious service in Iraq. Caldwell recently returned to work at Los Alamos after a one-year tour of duty in Baghdad and Al Anbar province.

Caldwell, now an Army reservist, went to Iraq to help train the Iraqi Army and also worked with the national police force. His job turned out to be much more than that of an instructor.

During an August 2006 combat patrol along the Euphrates River Caldwell's group was struck by an improvised explosive device. The blast left a crater five feet wide and four feet deep. The attack left one Marine dead, two soldiers injured, and one Iraqi interpreter injured.

According to his Bronze Star citation, Caldwell "showed personal courage by securing the area first, directed the evacuation of casualties, and remained on-site to ensure cleanup and investigation of the hostile location."

Although Caldwell is proud of his military awards, which also includes the Combat Action Badge, he feels the changes he brought to Iraq are

more meaningful to him. He



**DUTY CALLS:**  
 LANL's Tod Caldwell received the Bronze Star Medal for meritorious achievement for his efforts as part of Operation Iraqi Freedom.

said, "it really means something to you when the people you worked with tell you they want you to stay." He returned with a Koran and prayer beads, gifts from his Iraqi comrades.

While he left Iraq with a better understanding of its people, region, and religion, Caldwell believes the Iraqis he worked with also learned more about American society and American thinking. He said, "I think they came away with an understanding of how much work is required for their country to become a stable democracy."

Back at LANL, Caldwell is working in the condensed matter and thermal physics group, continuing his materials research using nuclear magnetic resonance.

# Reliable Replacement Warhead Supp

Detailing the rationale for NNSA's proposed Reliable Replacement Warhead (RRW), Administrator Tom D'Agostino recently told an audience at the Woodrow Wilson International Center for Scholars in Washington, D.C. that modernizing the U.S. nuclear stockpile is consistent with the U.S. nonproliferation commitment and will not increase terrorists' incentives.

"Terrorists are driven by hatred and ideology, not by the U.S. replacing its nuclear weapons stockpile with a safer, more secure and easier to maintain weapon," he said. "RRW is not likely to have any impact on rogue states either. These nations continue proliferating, operating secret nuclear programs, or both - all independent of what the United States does with its nuclear program."

D'Agostino said the RRW is designed to replace current, aging warheads and is not new in any traditional arms control or military sense.

"It provides no new military capability and will have the same fit, form, and function as our current weapons," he said. "It will not increase the size or power of the U.S. nuclear arsenal. It will simply allow us to deploy a safer, more secure design that gives us greater long-term confidence in the reliability of our stockpile, rather than having to depend on our old, outdated Cold War arsenal."

NNSA is pursuing RRW under the firm requirement that it will not need nuclear testing underground for certification to become part of the U.S. nuclear arsenal, the administrator said, which reinforces the commitment to maintain the U.S. moratorium on underground nuclear testing. "On the other hand, as the older weapons in our current stockpile age further, we cannot guarantee that they will not need to be tested to maintain confidence in their safety and reliability," he added.

Under NNSA's Stockpile Stewardship Program, the goal has been to predict the effects of aging in warheads so components can be replaced before they degrade overall system reliability - a process known as "life extension." D'Agostino used an automobile maintenance analogy to explain the complexity of the life extension process.

"Consider this challenge," he said. "Your 1965 Ford Mustang, which

you maintain as a collector's item, has been sitting in your garage for 40 years. You monitor it for such items as a clogged carburetor, corrosion in the engine block and battery



NNSA Administrator Tom D'Agostino

**The RRW will facilitate reductions in the U.S. m which have already been**

discharge, and you replace parts when you deem it necessary. However, you don't get to start the engine and take it for a test drive. The trick is to assure that if you do need it right away that it would work with certainty. That's what we have to do in our nuclear weapons life extension program."

Implementation of RRW can help NNSA achieve the goal of a smaller nuclear weapons complex that would be more secure, more efficient, more cost effective and safer for workers and the environment.

"To move us towards this [future] vision, we restored tritium production and extraction at the Savannah River

## The Reliable safety, s

Goals	
1	Smaller Stockpile
2	No Nuclear Testing
3	Advanced Safety a
4	Ease of Manufactur

# Supports Future National Security Needs

Site; we restored key uranium operations at Y-12; we are implementing plans to develop an interim plutonium pit production capacity of 30-50 pits per year at Los Alamos by 2012; we are

**Further nuclear stockpile, even substantial.**

reducing the number of sites with large quantities of special nuclear materials; and we are dramatically accelerating the dismantlement of retired warheads," he said.

Whole classes of nuclear weapon delivery vehicles (i.e. short-range and intermediate range nuclear-armed missiles), have been virtually eliminated. Last year, NNSA announced the dismantlement of the last remaining W56 nuclear warhead and completed dismantlement of two modifications of the B61 nuclear bombs. More recently, NNSA announced confirmation that rates for dismantling nuclear weapons has increased more than 50 percent over last year's dismantlement rate.

"While some would argue that the RRW program undermines U.S. nonproliferation goals, we see the overall RRW strategy as having positive implications for nonproliferation," D'Agostino said.

## The Replacement Warhead (RRW) will provide increased security, and reliability of the U.S. nuclear deterrent

	Benefits
	<ul style="list-style-type: none"> <li>• More reliable warhead and more responsive production capability could reduce need for large warhead reserve</li> </ul>
	<ul style="list-style-type: none"> <li>• Proven components and application of stockpile stewardship tools in advanced simulation, physics, and materials science will certify RRW's underground performance without need for nuclear testing</li> </ul>
and Security	<ul style="list-style-type: none"> <li>• More secure warhead with insensitive high explosive and fire-resistant pit will provide safer handling in production and operational phases</li> </ul>
e	<ul style="list-style-type: none"> <li>• Reduction in quantity of hazardous materials in nuclear warhead and modifications in production processes associated with radioactive materials will reduce waste and worker exposure to radiation</li> <li>• Streamlining manufacturing processes will reduce size of nuclear weapons complex</li> </ul>



## D'Agostino On RRW

To meet its own security needs and those of its allies, the United States will need a safe, secure, and reliable nuclear deterrent for the foreseeable future. We will achieve this with the smallest nuclear stockpile consistent with our nation's security.

We see increased risk, absent nuclear testing, in assuring the long-term reliability of today's stockpile of legacy warheads left over from the Cold War.

The infrastructure that supports the stockpile is very old and is not sufficiently responsive to possible technical problems in the stockpile.

Our task is to ensure that the U.S. nuclear weapons enterprise, including the weapons and supporting infrastructure, fully meet the long-term national security needs of this country.

Our approach is to develop replacement warheads for the legacy stockpile that are more reliable, more secure and safer.

Our goal is to transform our nuclear stockpile and modernize our infrastructure so we can reduce the stockpile even further.

# Y-12 Training Facility To Demonstrate Hands-on Nuclear And Radiological Training Capabilities

NNSA's Y-12 National Security Complex has converted a former nuclear research facility used during the Manhattan Project into space for hands-on nuclear and radiological field training, the only facility of its kind in the country.

The Nuclear and Radiological Field Training Center is located within the Y-12 National Security Complex, allowing for the use of realistic quantities of radiological and nuclear materials. More than 20,000 square feet of high bays, hot cells, change rooms, research labs, control rooms and office space can be set up to replicate nuclear or radiological hazards that may be found in the event of a terrorist attack or natural disaster.

Designed to train military and civilian emergency response units that may operate in nuclear and radiological environments, the center currently has six operational scenarios, including: dirty bomb explosion in an office environment, dirty bomb laboratory, nuclear research laboratory, nuclear materials drum storage area, vehicle transportation accident

scenario, and a vehicle smuggling scenario.

The six scenarios were developed based on unique requirements of previous training groups. Existing scenarios may be changed or additional scenarios can be configured to fit the requirements of each facility user.

"Before the Nuclear and Radiological Field Training Center, there were no hands-on training scenarios," said Kurt Westerman, program manager for the center. "All training was done in a classroom setting and with extremely small amounts of radiological or nuclear hazards. For the trainees, this is often the first time they have been in an environment that duplicates what they might actually see in the event of a terrorist incident or disaster."

Westerman spent 27 years in active and reserve duty with the United States Army. He also worked with BWXT's nuclear non-proliferation and

counterterrorism unit for six years.

The center has already conducted training with Weapons of Mass Destruction Civil Support Teams and active duty National Guard units that were created to respond to terrorist incidents, as well as other disasters and catastrophic events.

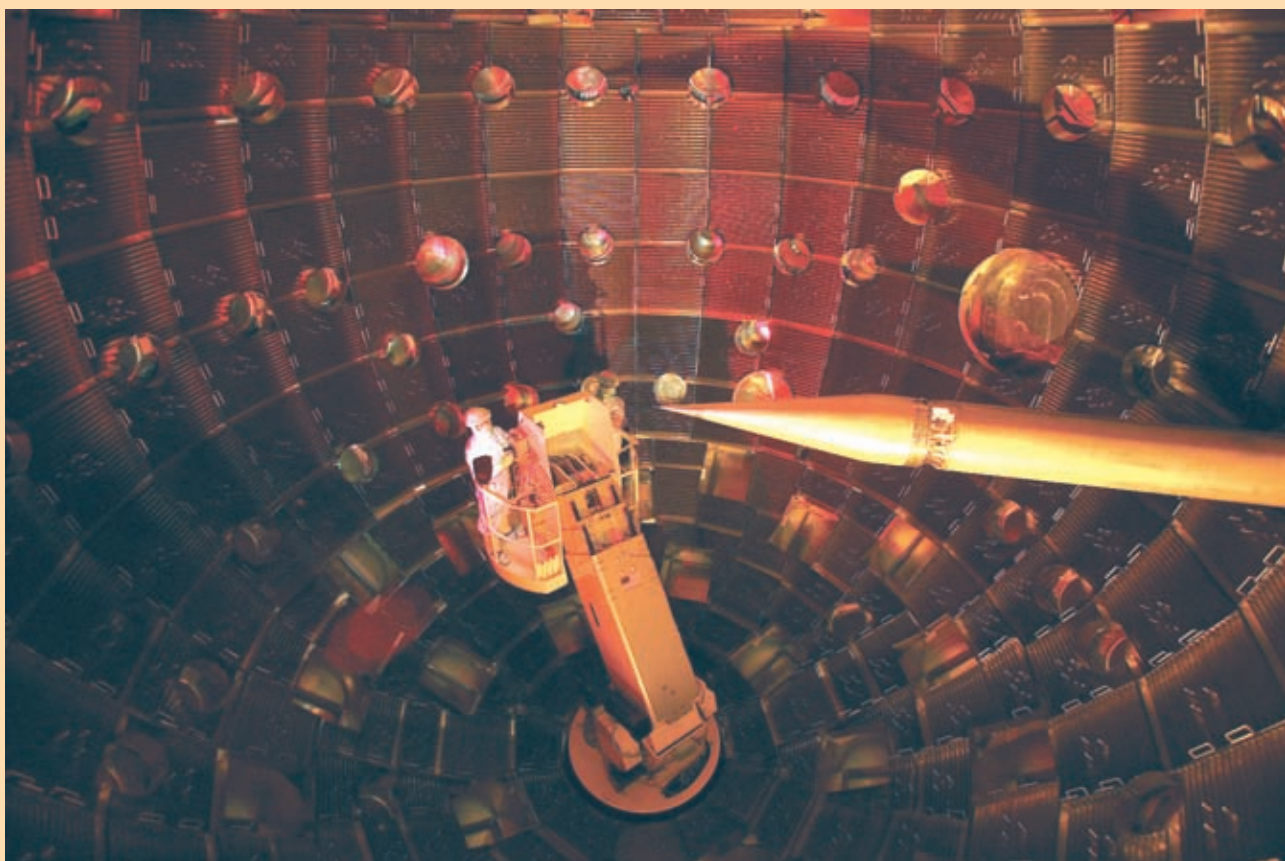
All trainees use their own equipment and receive hands-on experience in areas such as search and identification of nuclear and radiological materials, package and transport of those materials, consequence management, casualty extraction, site characterization, and decontamination.

In addition to Westerman, three other experts perform the hands-on training and set up all of the equipment and scenarios. Their combined experience includes the removal of surrendered materials from numerous foreign countries and a wealth of knowledge in radiological controls at Y-12.



**2007 CLASS OF FUTURE LEADERS:** This year's class of "future leaders" attended their graduation ceremony after completion of NNSA's Future Leaders Program. The program is designed to develop young professionals' skills at managing programs and projects within the nuclear weapons complex. Over the course of two years, participants are required to complete at least 10 weeks of classroom training, at least two rotational assignments in offices other than their home offices, and a "qualifications card" of required coursework. Participants are reassigned to their respective home offices upon completion.

This year's graduation ceremony featured remarks provided by Tyler Przybylek, special advisor to the administrator, and Raymond Greenberg, director of NNSA's Office of Human Capital Management Programs. In addition to the participants' families and friends, officials from various NNSA offices across the complex attended the ceremony.



**NIF MILESTONES:** Inside the National Ignition Facility's (NIF) 30-foot-diameter target chamber, workers inspect the target positioner extended to the center of the chamber. In the decade since its groundbreaking, the NIF at NNSA's Lawrence Livermore National Laboratory, which is now more than 92 percent complete, has 92 beamlines producing more than two megajoules of infrared laser energy. The beamlines make it possible for NIF to achieve 4.2 million joules in the infrared when all 192 beams are activated. NIF has also completed experimental demonstrations that show its ability to meet all of its ultraviolet light specifications. NIF Associate Director Edward Moses said, "A total energy of over 2.1 megajoules has now been fired. This is about 40 times what the Nova laser typically operated at the time it was the world's largest laser."

## NNSA Collaborates With Minority-Serving Institutions

Over the last two years NNSA's Office of Diversity and Outreach has successfully established collaborations for developing scientific curricula with twenty-seven minority-serving institutions of higher education. The collaborations help promote NNSA's mission and workforce development while increasing student interest in science, technology, engineering and math.

Another way that NNSA builds a pipeline for its future workforce is through internship programs. This year, NNSA's headquarters, field offices and laboratories provided 24 internships to students majoring in engineering, computer science and business from various minority-serving institutions. The students engaged in various research and development projects around the

NNSA complex. For example, Julius Jackson from Central State University in Wilberforce, Ohio, was among the research presenters at the Los Alamos National Laboratory Students Symposium 2007. He won an award in computer science for his presentation entitled "Writing and Executing Test Cases in the Waste Compliance and Tracking System."

## NNSA Scientists Receive Trailblazers Awards

NNSA's Dr. Kevin C. Greenaugh and Dr. Kimberley S. Budil were named the 2007 "Trailblazers" by Science Spectrum magazine.

The awards are given to exemplary Hispanic, Asian American, Native American, and Black professionals across the fields of science for their excellent research capabilities. The professionals honored with this award exemplify leadership and innovative thinking on the job that



**Dr. Kevin C. Greenaugh (left) and DOE Secretary Samuel W. Bodman.**

extends beyond their normal responsibilities.

Dr. Greenaugh is the acting director for the Office of Stockpile Assessments and Certification. The office contributes to NNSA's mission of ensuring the safety, security

and reliability of existing nuclear warheads without the use of underground nuclear testing.

Formerly, Dr. Greenaugh worked as a scientist and engineer at NNSA's Los Alamos National Laboratory. He has an extensive background in nuclear engineering and was the first African-American to receive a Ph.D. in nuclear engineering at the University of Maryland. In 2005, Greenaugh was honored with the Federal Black Engineer of the Year award.

Dr. Budil is the associate program leader for Science, Technology and Experiments at NNSA's Lawrence Livermore National Laboratory. In this role, she manages the fundamental materials research program including the Dynamic Material Properties Campaign and the Advanced Simulation and Computing Physics and Engineering Models Program.

Previously, Dr. Budil spent two years detailed to NNSA headquarters where she worked in the Office of Defense Science. She has a Ph.D. in applied science from the University of California at Davis and has pursued high-energy-density and materials science research since joining the laboratory staff in 1994. She has been very active in diversity issues, and recently served on the American Physical Society Committee on the Status of Women in Physics.

## NNSA Opens Center To Promote Security Awareness

NNSA's Office of Defense Nuclear Security recently opened the Defense Nuclear Security Lessons Learned Center at the Los Alamos National Laboratory to encourage and facilitate the sharing of lessons-learned data and information on physical security-related issues. The center will ultimately help users from across the nuclear weapons complex identify and implement effective solutions to various security issues.

The center helps to promote and improve Defense Nuclear Security's mission of protecting NNSA's personnel, facilities, nuclear weapons and information from a full spectrum of threats, most notably the threat of nuclear terrorism. NNSA established the program to collaborate with and cooperate with all DOE facilities and collect security-related information to help make NNSA's facilities more secure.

The center provides a repository and forum for sharing innovative new tools and practices to address common security issues, to improve the efficiency of the security program, and ultimately to help prevent security incidents. To better develop and implement policies, procedures and systems that will better manage security risk, the center also provides security experts with access to information about real-world security successes.

Additionally, the forum promotes open discussion on ways that NNSA employees can play an active role in their own security. Some of the security issues that will be discussed in the forum include: information security, protective forces, and physical security systems. The DNS-LLC website is [www.dns-lessons.lanl.gov](http://www.dns-lessons.lanl.gov).

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