September 2010

National Nuclear Security Administration Monthly News

Secretary Chu Leads U.S. Delegation to IAEA General Conference

Administrator D'Agostino, Deputy Secretary Poneman Traveled to Vienna

NNSA Administrator Thomas D'Agostino traveled to Vienna, Austria, this month to take part in the 54th International Atomic Energy Agency (IAEA) General Conference.

Secretary of Energy Steven Chu led the U.S. delegation to the General Conference and delivered the U.S. plenary address to all General Conference attendees. Deputy Secretary Daniel Poneman and Administrator D'Agostino were part of the U.S. delegation.

AP HELPER: Administrator D'Agostino visits the NNSA booth at the IAEA General Conference in Vienna and learns about the new "AP Helper" online tool created by the Office of Nonproliferation and International Security to help other countries meet their declarations under the Additional Protocol.

Last April, President Obama delivered a landmark speech in Prague outlining his agenda and announcing a plan to secure all vulnerable nuclear material worldwide. This year, NNSA's message at the General Conference echoes four main themes from the President's speech: securing and removing nuclear material, preventing nuclear smuggling,

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Bacchus Subcritical Experiment Conducted at NNSS

Bacchus, a subcritical experiment, was successfully conducted at 5:35 p.m. on Sept. 15, in an experiment room approximately 963 feet underground at the U1a Complex of the Nevada National Security Site (NNSS).

The experiment, conducted by Los Alamos National Laboratory, was the 24th subcritical experiment conducted to date at the NNSS. The last experiment was Unicorn, which was conducted on Aug. 30, 2006. Subcritical experiments do not reach "criticality" where a self-sustaining nuclear chain reaction would occur; rather, these

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Administrator's Corner

With summer giving way to autumn, this is a time when vacations end and children head back to school. It is also an opportunity to reflect on a summer of incredible accomplishments and the important work we have ahead of us during the last quarter of this year.

As you may have seen, the Senate Foreign Relations Committee took an important step this month, voting in a bipartisan fashion to move the New START agreement to the Senate floor. The vote, by a 14-4 margin, is the latest example of the emerging national consensus on the importance of the work going on across our enterprise.

President Obama has pledged $80 billion over the next decade to modernize our infrastructure and give us the tools we need to support our nation's nuclear security priorities. This is an important vote of confidence in each of you and a reminder of the importance of our mission.

This month, I also made my second trip the International Atomic Energy Agency's (IAEA) General Conference in Vienna. I was proud to accompany Secretary Chu and Deputy Secretary Poneman as they led the U.S. delegation. I was even more proud to use the trip as an opportunity to highlight the terrific work happening across the enterprise

By utilizing the best nuclear science and technology in the world, we are working to enhance our nation's security and make the world a safer place. As an example – just one of many – our Next Generation Safeguards Initiative is helping improve the techniques and technologies used by the IAEA to verify nations' nuclear nonproliferation commitments. It's an incredibly important task, and in each of my meetings our international partners praised NNSA for the work you are doing.

Meeting the President's unprecedented and ambitious nuclear security agenda is a tall order, but I am reminded every day that the team we have here at NNSA and across our enterprise is up to the task. Keep up the great work.

Tom D'Agostino

Secretary Chu Leads U.S. Delegation to IAEA General Conference

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strengthening safeguards, and disposing of surplus fissile materials.

The IAEA is the central organization for global nuclear cooperation. Set up within the United Nations as the world´s "Atoms for Peace" organization in 1957, the IAEA works with its member states and multiple partners worldwide to promote the safe, secure and peaceful use of nuclear technologies.

NNSA's Office of Defense Nuclear Nonproliferation and Office of Emergency Operations participated in numerous bilateral meetings during the weeklong conference. Administrator D'Agostino also toured the Comprehensive Test Ban Treaty Organization and held a press roundtable with reporters covering the conference.

One highlight of the week was the public signing of a Memorandum of Cooperation on nuclear safeguards and other nonproliferation topics with the Tunisia Ministry of Higher Education. Administrator Thomas D'Agostino and Dr. Adel Trabelsi, director general of Tunisia's Centre National des Sciences et Technologies Nucléaires (CNSTN), signed the memorandum at an official ceremony.

For additional highlights from the Administrator's trip, check out his travel blog at nnsa.energy.gov/iaea2010.

Bacchus Subcritical Experiment Conducted at NNSS

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experiments examine the behavior of small amounts of plutonium when shocked by chemical high explosives.

Data recovery from the Bacchus experiment was excellent. Several complementary diagnostic tools were used for capturing data. The primary diagnostic tools were two large X-ray machines known as Cygnus, which take radiographs of the shock effects at a precise time following detonation of the chemical high explosives. Information obtained in these experiments is used in computer models for determining the safety and effectiveness of the nuclear weapons stockpile. Bacchus is the first of three planned experiments in the Barolo series. Barolo A and B are scheduled to be conducted in the first and second quarters of fiscal year 2011.

The period of time between the Unicorn experiment and Bacchus was spent developing procedures and processes and certifying the staff members to start up and operate the current experimental area of the U1a Complex as a Category III nuclear facility. The intent is to maintain the current experimental area, and other areas as they are developed, as Category III nuclear facilities to reduce the effort and time required to field each experiment and thus, greatly reduce the cost to the Stockpile Stewardship Program.

Y-12 Removes Nuclear Materials, Reducing Site's Nuclear Footprint

The Y-12 National Security Complex has completed the removal of nuclear materials from two additional facilities, significantly reducing its classified storage area and the cost of securing nuclear materials at the site.

The 613,642-square-foot Alpha 5 Building (also known as 9201-5) and the 7,700-square-foot 9720-38 storage facility no longer carry nuclear designations, resulting in significant cost savings.

Shedding the nuclear facility status at Alpha 5 results in an annual savings of $220,000 in surveillance and maintenance expenditures alone. Add in the savings associated with utilities and environmental costs, and the benefit to taxpayers grows.

"This is an important milestone as we continue to transform NNSA's Cold War-era nuclear weapons complex into a 21st century nuclear security enterprise," said NNSA Deputy Administrator for Defense Programs Don Cook.

Built in 1945 to house the calutrons that enriched uranium for the Manhattan Project, Alpha 5 played a central role in nuclear component production through the Cold War. Building 9720-38 was a classified storage area. Also, last year, the 313,771-square-foot Beta 4 building (also known as 9204-4) received its non-nuclear designation.

Y-12 Transformation Continues With Potable Water Project, New Towers

Y-12 recently completed its potable water project ahead of schedule and under budget.

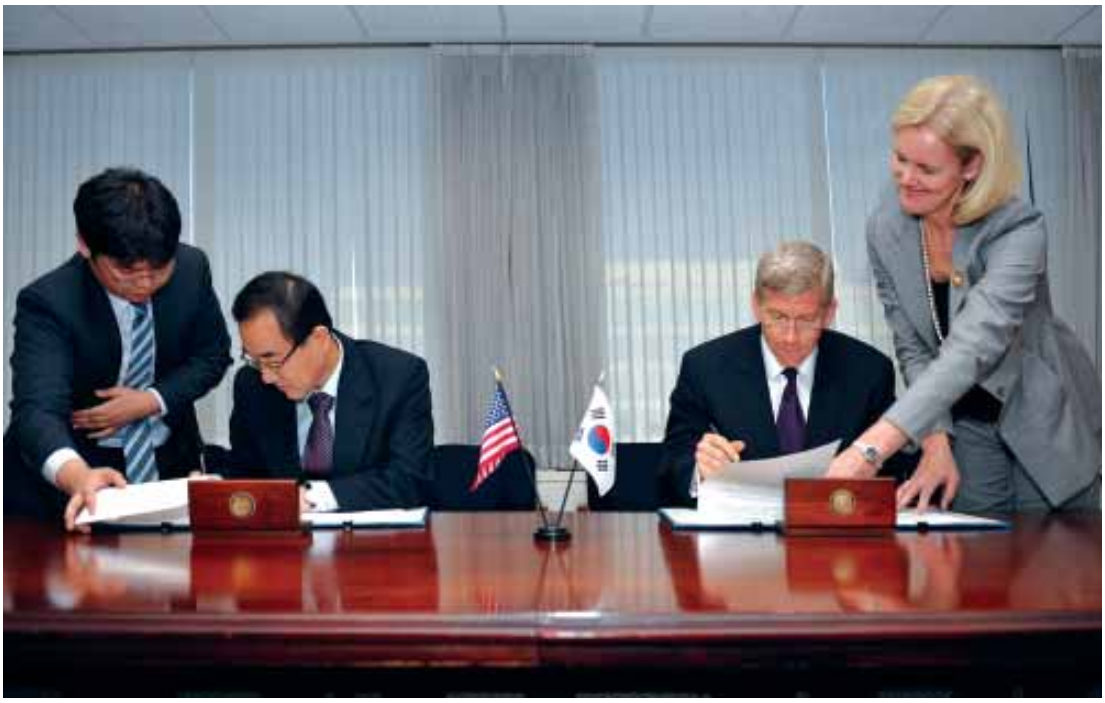
The new Y-12 Potable Water System Upgrades Project includes two prominent, 220-foot-tall water towers and more than a mile-and-a-half of newly installed water lines. The $62.5 million potable water system provides a more reliable long-term water supply. In addition to 8,360 linear feet of newly installed piping, 3,800 linear feet were replaced, and another 2,115 feet were cleaned and lined.

The water project eliminates $25 million in deferred maintenance costs associated with the potable water distribution system.

The most visible features of the project are the two water towers, each holding two million gallons. The towers are similar to those many cities across the country use to supply drinking water. The height of the towers allows greater water pressure, which provides a more reliable source of water for all areas of the site. The site uses potable water for operations as well as drinking water.

The project is part of the NNSA's Facilities and Infrastructure Recapitalization Program, which is aimed at reducing a large maintenance backlog, improving the state of site utilities and eliminating excess facilities across the sites.

JOINT COMMITMENT: Deputy Secretary of Energy Daniel Poneman and Korea Customs Service Commissioner Yoon Young-sun sign a memorandum of understanding paving the way for NNSA's Megaports Initiative to work with Korean Customs to combat nuclear smuggling.



NNSA Breaks Ground on New Facility in Kansas City

Manufacturing Plant Will Save $100 Million Annually Upon Completion

On Sept. 8, NNSA Administrator Thomas D'Agostino joined officials from the General Services Administration, members of the Missouri Congressional delegation, Kansas City Plant (KCP) leadership and local dignitaries to break ground on the new state-of-the-art campus that will house NNSA's multi-million dollar manufacturing plant in south Kansas City.

The group addressed a crowd of more than 500 people at the construction site before putting the first shovels into the ground.

"The Kansas City Plant has a proud tradition of distinguished service to the country for over 60 years," D'Agostino said. "This new campus will continue in that tradition as we move from a Cold War era nuclear weapons complex into a more efficient 21st century national security enterprise."

The Kansas City Responsive Infrastructure, Manufacturing and Sourcing (KCRIMS) campus is eight miles south of NNSA's current location at the Bannister Federal Complex. A phased move is scheduled to begin in late 2012.

CAPTION: NNSA Administrator D'Agostino joins members of the Missouri Congressional delegation, Generak Services Administration and Kansas City Plant leadership and other local officials to break ground on the new manufacturing facility in south Kansas City.

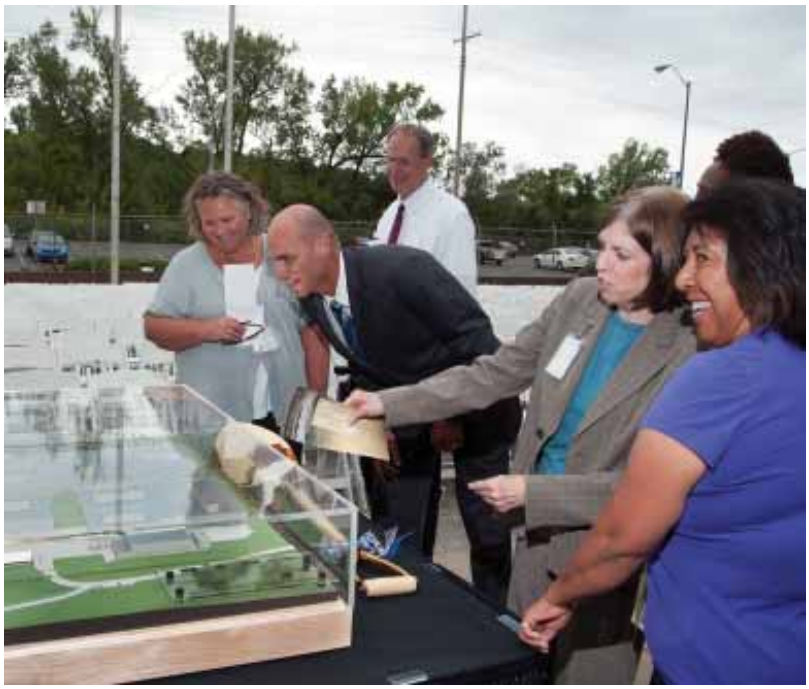
The $687 million new campus will house roughly 2,500 employees and consists of manufacturing, laboratory, office, and warehouse space.

"It truly has been a team effort to get to this point, and we look forward to the day when we begin operations at the new campus," said Mark Holecek, NNSA's Kansas City site manager. "The new building will reduce energy consumption by more than 50 percent and is one of the first LEED Gold manufacturing campuses.

Overall, the new campus will save the government about $100 million annually."

Administrator D'Agostino, Holecek and other leaders also addressed the entire KCP workforce at the existing Bannister Complex location that afternoon. That event was followed by the unveiling of a scale model of the new facility and a celebration for the workers.

FUTURE OPERATIONS: At an afternoon celebration at the existing Kansas City Plant facility, Administrator D'Agostino and others unveil a model of the new facility, which will be more efficient and will save taxpayers $100 million a year.



NEW FACILITY CELEBRATION: Kansas City Plant workers get an up-close look at the new facility, which will house roughly 2,500 employees and consists of manufacturing, laboratory, office, and warehouse space.

"The Kansas City Plant has a proud tradition of distinguished service to the country for over 60 years."

Thomas D'Agostino
NNSA Administrator

The Science of Nuclear Security

Sandia Cutting Tool Disables Improvised Explosive Devices

Water Blade Saving Lives of U.S. Troops in Afghanistan

Sandia National Laboratories has developed devices that shoot a blade of water capable of penetrating steel that were sent this summer to U.S. troops in Afghanistan to help them disable deadly improvised explosive devices (IEDs).

Sandia licensed the patent-pending technology to a small minority-owned business, TEAM Technologies Inc. The tool was invented for an NNSA sponsor.

"The fluid blade disablement tool will be extremely useful to defeat IEDs because it penetrates the IED extremely effectively," said Greg Scharrer, manager of the Energetic Systems Research Department at Sandia. "It's like having a much stronger and much sharper knife."

Soldiers who had served in Afghanistan and Iraq field-tested the device during training at the federal laboratory and suggested improvements while the product was being developed.

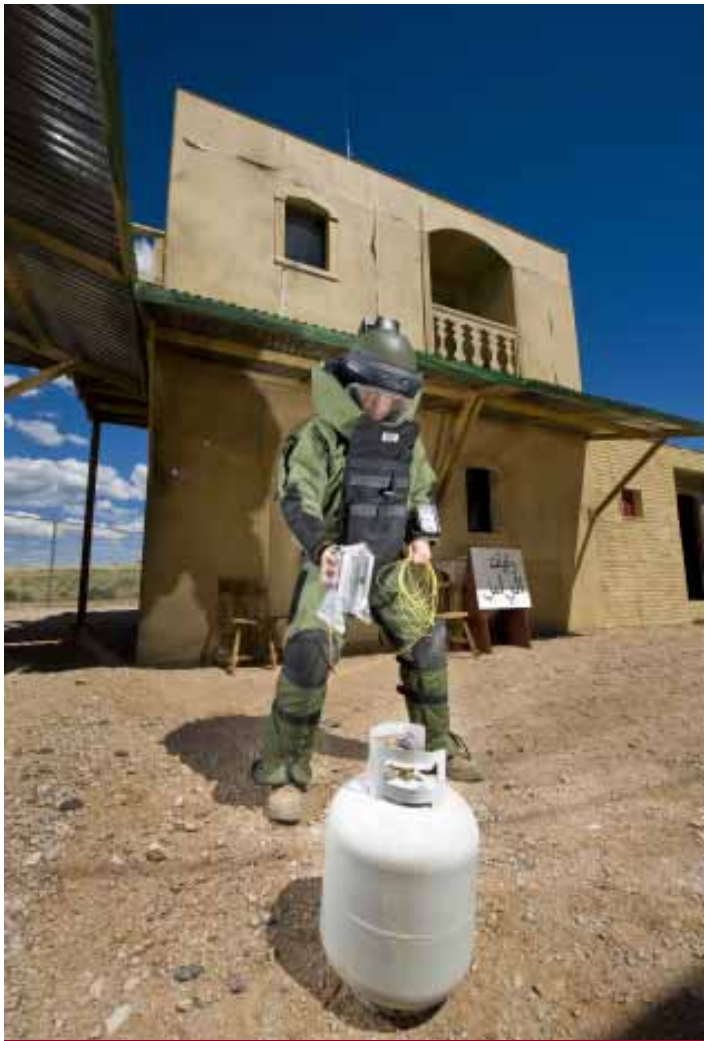
The portable, clear plastic device is filled with water and an explosive material . When detonated, the explosive material creates a shock wave that travels through the water and accelerates it inward into a concave opening. When the water collides, it produces a thin blade.

Sandia researchers use shaped-charge technology to deliberately manipulate the explosives so that they create a certain shape when they detonate, allowing the operator to focus the energy precisely where it's needed.

The process happens in microseconds and can't be captured by the human eye, so researchers used computer simulation and high-speed flash X-rays, which can view the interior of imploding high-explosive devices and record the motion of materials moving at ultrahigh speeds, to fine tune the design.

TEAM Technologies improved the tool based on the soldiers' input after it was exposed to dust, water and banging around by the troops. The improvements included providing a better seal and redesigning the water plug so it is easier to insert.

The tool can be placed almost in contact with the target or a distance away without losing its effectiveness. It uses minimal explosive material, its plastic legs can be attached in various configurations so that it can be placed in different positions to disable bombs, and it is built so that robots can easily place it near a target.



DISABLING IEDs: Airman 1st Class Patrick Connolly of Dayton, Ohio, demonstrates the placement of a water disruptor developed at Sandia National Laboratories near its target in a simulated village used to train soldiers heading overseas.

NNSA Reaches Nonproliferation Milestone

NNSA announced in September that it reached a significant milestone in its HEU Transparency Program. Since 1993 the program, through the 1993 U.S. - Russia HEU Purchase Agreement, has monitored the elimination of more than 400 metric tons (MT) of Russian highly enriched uranium (HEU) – the equivalent of more than 16,000 nuclear weapons.

The 1993 U.S. - Russia HEU Purchase Agreement is now 80 percent complete and on track to convert 500 MT of HEU from dismantled Russian nuclear weapons into low enriched uranium (LEU) by 2013. The agreement requires Russia to convert weapons-origin HEU into LEU. The LEU is then delivered to the U.S. where it is fabricated into nuclear fuel for commercial reactors. Nearly half of all electricity generated in commercial nuclear reactors in the U.S. and roughly 10 percent of all electricity nationwide comes from fuel that has its origins in Russian nuclear weapons.

"This is the ultimate swords to plowshares program, and I commend the continued joint commitment of the U.S. and Russian Federation to the safe and irreversible elimination of excess fissile materials under this important bilateral agreement," said NNSA Administrator Thomas D'Agostino. "This milestone puts us one step closer to accomplishing the President's goal of securing or eliminating all weapons-usable nuclear materials worldwide."

NNSA facilitates cooperative monitoring visits in Russia and the U.S. to ensure that all LEU delivered to the U.S. under the agreement is derived from Russian weapons HEU and to ensure that the LEU delivered to the U.S. is fabricated into reactor fuel for commercial reactors. This information allows the U.S. to confirm that Russian HEU conversion activities fulfill the agreement's nonproliferation goals. To date, NNSA has conducted 290 monitoring visits to Russian HEU processing facilities, and U.S. experts monitor the elimination of 30 metric tons of HEU each year – the annual equivalent of 1,200 nuclear weapons.

EXCEPTIONAL SERVICE: Sandia National Laboratories recently commended its protective force for six decades of exceptional security service to the laboratories and the nation. Pictured above are trained Sandia security officers posing as intruders during a protective force training exercise.

New Pantex System Saves Time, Money

A special tooling system designed to improve the processing time of the B83 has been created by a Pantex team. The system will cut in half the number of facilities needed to process a B83 unit and reduce the time it takes to process each unit.

The system, part of a newly engineered tooling set for processing the B83 strategic bomb, is comprised of the bomb stand, personnel platforms, unit handling fixtures, and air powered vacuum chamber carts. The tooling provides a safe and controlled method of handling a 2,500-pound assembly in a single nuclear explosive operating area without the need for hoisting or rigging equipment.

"We applaud the Pantex Tooling and Machine Design team that created the special tooling system by leveraging decades of nuclear security expertise," said Don Cook, NNSA deputy administrator for Defense Programs. "This system will allow NNSA to use fewer resources to dismantle the B83 in support of the President's goal of reducing the size of the nation's stockpile."

The backbone of the tooling system is the bomb stand that is the largest weapon stand developed to date by B&W Pantex Tooling and Machine Design Department. The bomb stand is approximately 10 feet tall and weighs more than 3,800 pounds. The stand and associated tooling is designed to manipulate the 2,500 pound assembly with precision and to improve safety during disassembly operations.

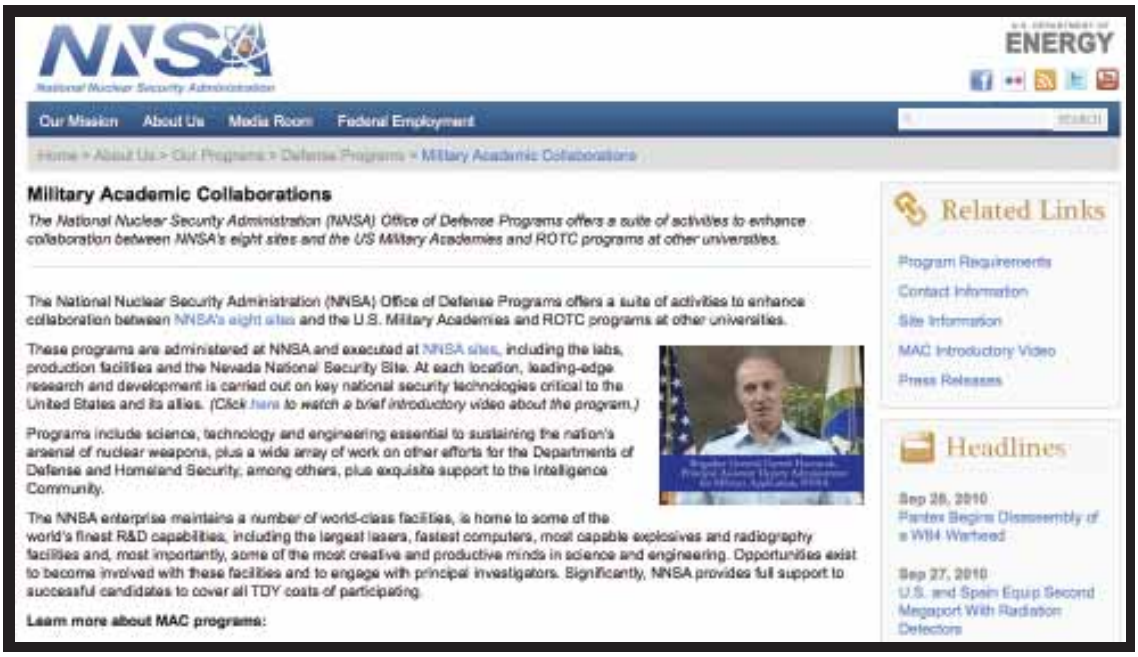
The new system will be implemented in late 2011 as part of the continuous improvement aspect of the Integrated Safety Management process known as Seamless Safety for the 21st Century.

NNSA Military Academic Collaborations Website

NNSA has launched a new website to promote its Military Academic Collaborations (MAC) program, which will place military academy cadets, midshipmen and officers in tours of duty within science, technology, engineering, national security and relevant fields at any of the NNSA sites. The program also will continue to offer opportunities for ROTC students during their summer breaks.

The MAC website features an overview of the program, requirements, contact information and an introductory recruitment video message from Brig. Gen. Garrett Harencak, NNSA's principal assistant deputy administrator for Military Application.

Learn more about the program by visiting the website at nnsa.energy.gov/mac.



Investment in Protective Force Infrastructure Continues at LANL

Investments in re-building the Los Alamos National Laboratory (LANL) protective force training infrastructure continues as a fitness running track and a new Firearms and Tactics Simulator Facility have been recently completed. In addition, construction has started on a new Tactical Training Facility (TTF), and design planning began of a new Indoor Firearms Training Facility.

The new running track provides security police officers enhanced capabilities to meet and maintain the demanding fitness standards required by federal regulations. Up to this point, the lab's protective force relied on sharing the local high school's track.

The Firearms and Tactics Simulator provides security police officers a realistic training facility for conducting firearms manipulations and practicing simulated individual tactics and team tactical engagements using computer-generated scenarios that closely mimic hostile attacks on laboratory facilities.

When completed, the TTF will have movable walls that will allow the facility to replicate interior tactical situations that could be encountered at LANL. Exercises can be conducted using simulation firearms that will provide realistic training and enhance the tactical skills of the security police officers. The facility will allow units to train on team tactics providing another environmentally friendly and efficient facility.

When completed, the new indoor live fire range can also be used year round in all types of weather and be used at all hours of the day and night. It is also environmentally friendly, capturing all expended ammunition. This new range will allow security police officers an environment to enhance skills, maintain proficiency, and ensure protection of national assets.

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