

## New Fire Stations Opened at Nevada National Security Site

The doors were officially opened on two new fire stations at the Nevada National Security Site (NNSS) in October that are expected to significantly improve fire-fighting services not only at the Site, but for local agencies that rely on NNSS fire units for interagency assistance.

A ribbon-cutting ceremony was held Oct. 6 for a smaller Station No. 2, located in Area 6, about 22 miles north of Mercury. Local, state and federal dignitaries, along with fire officials from Las Vegas, Nye County and other areas were on-hand Oct. 13 for a formal ceremony to open Station No. 1, built in Mercury, known as Area 23 of the Site.

Construction began on the stations in April 2009. Both stations were completed on time and at a cost of about \$35 million, significantly under the original \$42 million budget.

The original stations were built to house only firefighters, but the new facilities will support missions that were consolidated in 1996 to include structural and wildland firefighting operations, hazardous materials operations, paramedic level emergency medical services, and technical rescue operations, among others.

For more on NNSS Fire and Rescue, see pages 4 and 5.



NNSS Fire Chief Charles Fauerbach (center) uncouples a fire hose with Nevada Site Office Manager Steve Mellington (right) and National Security Technologies President Steve Younger (left) during the opening ceremony for Station No. 1.

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# SITELINES

## NNSA Announces New Name for Changing Test Site

*Nevada National Security Site to Support Wide Variety of National Security Missions*

National Nuclear Security Administration (NNSA) Administrator Thomas D'Agostino recently joined senior officials from the U.S. Department of State, Department of Defense (DoD) and the Department of Homeland Security (DHS), as well as members of Nevada's congressional delegation, for a ceremony to announce the new name of NNSA's 1,360 square mile facility located 65-miles northwest of Las Vegas.

The new name for the site – the Nevada National Security Site (NNSS) – better reflects the diversity of nuclear, energy and homeland security activities being conducted there, D'Agostino said.

*Continued on page 8*



Present at the unveiling of the NNSS plaque announcing the name change were (l-r): Congresswoman Dina Titus, Congresswoman Shelley Berkley, Senator Harry Reid, NNSA Administrator Tom D'Agostino, NNSA/NSO Manager Steve Mellington and NSTec President Steve Younger.

## Defense Award of Excellence



*The National Nuclear Security Administration recently presented awards of excellence to various Nevada Nuclear Security Site (NNSS) programs, including the Phoenix project, managed by Lawrence Livermore National Laboratory (LLNL) and National Security Technologies (NSTec). Two Phoenix high explosive pulsed power Full Function Tests were successfully conducted on March 20 and July 16, 2009, at the Big Explosive Experiment Facility at NNSS. The Phoenix tests are a series of high explosive pulsed power experiments to develop a reliable and repeatable physics driver for obtaining equation of state data over a pressure range of interest. This was a key milestone for the Phoenix program and represents the foundation for an unprecedented capability for the NNSA. Here, Roger A. Lewis (left), Sites Chief Performance officer, Defense Programs presents the award with (from left) Randy Flurer (NSTec), Richard Higgs, Joint Nevada Program Office manager, Steve Mellington, Nevada Site Office manager (right) and Steve Younger, NSTec president.*

For more on Performance Awards, see page 8.



### Safety Key

The Nevada Site Office has ramped up disposal operations to allow for up to 318,000 cubic feet of low-level and mixed low-level waste per month at the Area 5 RWMS.

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### Subcritical

The U1a Complex team completed the start-up process, received approval for "hot operations" and recently fielded and executed a subcritical experiment at NNSS.

See page 7.

## Mountain Lions at Nevada National Security Site Become Subject of Study

A two-year study is underway to help wildlife biologists better understand the behavior of mountain lions living on and around the Nevada National Security Site (NNSS). Researchers hope to determine where these elusive predators live, what they eat, and how best to manage potential risks to workers at the site.

With funding and field support provided by the U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office, a research team was recently assembled to trap eight mountain lions at the NNSS over the next two years, fitting each animal with a GPS satellite collar to track the cats' movements over continuous 24-hour periods. Using the tracking devices, researchers will document each animal's location six times per day and physically visit one or two clusters of locations per week to gather information on recent kills.

"We want to determine where lions are most likely to be predatory," said wildlife biologist David Mattson, who is heading up the study. Dr. Mattson of the U.S. Geological Survey, along with a field team from National Security Technologies (NSTec), the management and operating contractor for the NNSS, aims to record the hunting behaviors of the eight collared cats, whose diets are known to include mule deer, young horses, and rabbits. "It is important to know what is being hunted and under what circumstances in order to better understand the risk to potential prey," Mattson said.

While mountain lion attacks on humans are extremely rare (only one attack has ever been documented at the Site), the last five years has seen an increase in the number of lion sightings, particularly at the lower elevations. Remote, motion-activated cameras installed to monitor the movement of mountain lions have captured photographs of the animals near active work facilities. "Even though the risk of an employee being attacked by a mountain lion is extremely low, we want to assess where the risk is the highest since some new projects are being conducted in mountain lion habitat," said Federal Project Director Peter Sanders.

One of the goals of mountain lion research is to understand the often disparate behaviors between young and older animals. While the innately cautious mountain lion rarely risks contact with humans, young lions are more likely to attack a human than their older



Mountain lions are part of an ongoing Species and Habitat Monitoring Program at the NNSS.

counterparts. The physical condition of the lions may also play a role, as young lions in poor health tend to be more aggressive. In addition, juveniles typically roam further than the more seasoned lions. Young lions in the southwest have been known to stake out ranges that extend as far as 400 square miles, whereas adult lions typically roam within a 300 square-mile radius.

Managing risk to workers is the primary objective of the study; but researchers also hope to explore broader questions about how predator/prey relationships play out in habitats that are restricted from public access. "This is an incredible opportunity to look at the predator/prey dynamic without the effect of human interference," said Dr. Mattson. The government-controlled land in and around the Nevada National Security Site offers an unprecedented stage for observing wildlife unaffected by construction/development and outdoor recreation, like camping and hunting, Mattson said. "Being able to look at an unexploited population of lions is an extraordinary situation that simply doesn't exist anywhere else in North America at this time."

## Nevada Site Office Set to Host Middle School Science Bowl Event

Twenty years ago, the U.S. Department of Energy National Nuclear Security Administration (DOE/NNSA) Nevada Site Office became the host and signature sponsor of the Nevada Regional Science Bowl as they launched the first competition with 19 high school teams.

In 2011, the Nevada Regional Science Bowl will expand to include a middle school competition. The Nevada Site Office is doubling its involvement as it expects to host a full roster of 64 teams (32 high schools and 32 middle schools) from Nevada, Arizona, California, and Utah.

Competing teams are quizzed in biology, chemistry, physics, earth science, general science, astronomy, and mathematical topics as well as a middle school hydrogen fuel car race. Middle school students build and race the cars during the event.

Regional competitions take place around the country, and the winning regional teams compete for additional prizes as well as the national title in the DOE's National Science Bowl competition in Washington, D.C., April 28 – May 3, 2011.

Generous sponsors are honored for their continued support throughout the event locally and nationally (their support is honored in the U.S. DOE National Science Bowl publications). Major sponsors already include National Security Technologies (NSTec), the management and operational contractor for the Nevada National Security Site, Northrop Grumman, the Bureau of Reclamation, WSI, Alphatech, Inc., Navarro Interra, Navarro Research & Engineering, NV Energy, and University of Nevada Las Vegas.

The U.S. DOE established the National Science Bowl in 1991 to encourage students to achieve educational excellence in the sciences. The February 2011 event marks 20 years of local competition.

### Upcoming Science Bowl Schedule:

#### Middle School

Atomic Testing Museum – February 4, 2011  
Henderson International School campus –  
February 5, 2011  
Hydrogen Car Race - TBD

#### High School

Atomic Testing Museum – February 25, 2011  
University of Nevada Las Vegas campus (UNLV) –  
February 26, 2011

For more information contact the program coordinator, Vicky Walter at (702) 295-2822 or WalterVL@nv.doe.gov.



A High School Science Bowl team in action.

# SITELINES

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## Bacchus Experiment Focuses on Stockpile Stewardship

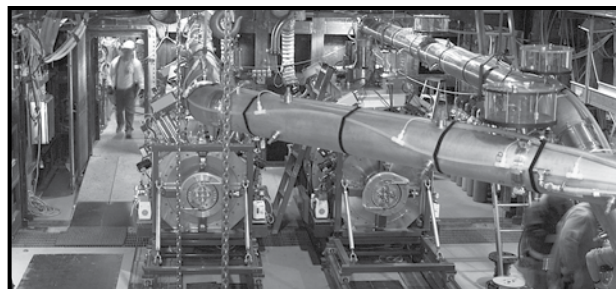
An underground laboratory at the Nevada National Security Site (NNSS) was the place where scientists recently completed an experiment that provided technical information to help maintain the safety and reliability of the U.S. nuclear weapons stockpile.

Known as Bacchus, the research was part of a collaborative agreement between Los Alamos National Laboratory (LANL), National Security Technologies (NSTec), the Joint Nevada Program Office, Sandia National Laboratories, WSI, and a myriad of support contractors and federal agencies.

The subcritical experiment occurred in a half-mile tunnel located about 960 feet below the surface at the NNSS. It was the first subcritical experiment conducted since 2006.

During the experiment, data were collected from plutonium when it was subjected to tremendous shock waves, mimicking environmental conditions of a nuclear explosion.

The experiment were subcritical; that is, no critical mass was formed and no self-sustaining nuclear chain reaction could occur, thus there was no nuclear explosion.



At 963 feet below ground level, the Cygnus Dual Axis Radiographic sources in the U1a Complex take images of the plutonium as it's being shocked by the high explosive.

Scientists are interested in the behavior of plutonium as it ages, as is happening with the nation's stockpile today. Bacchus examined the stresses and material conditions of old and new plutonium using radiographic technology.

Much like a dental X-ray, this technology allows scientists to study the depths of the plutonium layers in nuclear weapons to determine factors such as density and velocity under extreme conditions

"Experiments like Bacchus are the foundational programs that enable Defense Experimentation and Stockpile Stewardship (DE&SS) and its many technical resources and capabilities to be key contributors to the nation's stewardship program," says Raffi Papazian, division manager for DE&SS's Missions and Projects. "Experiments like these enable us to assess the nature of our stockpile. The information we get from these experiments supports the annual certification of our nation's nuclear weapons stockpile and provides the assurance that the stockpile is safe, secure and reliable."

Bacchus was the 24th subcritical experiment at NNSS to date. The last was Unicorn, conducted in August 2006.

## New Robots Improve Security While Reducing Costs at the NNSS

*System Saves Millions of Dollars in Security Costs at Remote Portions of the Site*

The National Nuclear Security Administration (NNSA) has announced that the Nevada National Security Site (NNSS) has brought the first of three Mobile Detection Assessment Response System (MDARS) robots online to improve security patrols at remote portions of the NNSS.

The small autonomous robot, which is remotely operated from a command center at the NNSS, is designed to perform random patrols. Onboard sensors and real-time video allow the operator to see intruders or suspect activity as soon as the robot encounters it. The MDARS unit operates independently and only requires direct operator action to assess situations when encountered.

"The robots are a great addition to the NNSS protective force," said Brad Peterson, chief and associate administrator for Defense Nuclear Security. "The robots allow us to improve security at remote portions of the Nevada National Security Site at reduced costs. Deploying MDARS robots at the NNSS is another example of NNSA's commitment to being effective stewards of taxpayers' money. NNSA applauds the NNSS in seeking ways to improve the way it does business while maintaining the highest security standards."

Members of the protective force went through extensive training on the MDARS. This included learning how to manually initiate and postpone patrols, how to manually drive the unit when necessary and how to use the unit's microphone and speaker to interact with humans it encounters.

The robots operate at speeds of up to 20 miles per hour and can go for 16 hours of continuous use without having to be refueled. The robots can keep track of inventory, as well as gates, locks and other barriers, by using radio frequency identification tags.

NNSA and the Office of Health, Safety and Security (HSS) collaboratively worked to



Nevada Site Office Technical Security Engineer Steve Scott discusses the MDARS robot at NNSS.

prototype test and purchase the first MDARS unit in 2009 and acquired two additional units and numerous spare parts from the U.S. Army/PM-FPS in 2010. Use of the robot will result in an estimated cost avoidance of \$6 million in infrastructure investments for equipment such as cameras, towers, lights, trenching and burial of cables to support towers and motion detection units to support protection of remote sensitive areas. Additionally, the robots will result in an annual cost avoidance of \$1 million in protective force expenditures and equipment maintenance. Two additional units will be deployed in the next six months at various remote locations at the NNSS.

Program support for the system came from NNSA and HSS. The Department of Defense (DOD) Physical Security Equipment Action Group (PSEAG) provided funding to the Army/PMFPS in developing the MDARS. General Dynamics Robotic Systems (GDRS) has been developing the MDARS concept since 1993.

## NEWS BRIEFS

### Toys for Tots Campaign Gets Underway

The Toys for Tots program is getting underway, and National Security Technologies (NSTec) is asking all employees of the Nevada National Security Site (NNSS) to help make this year's campaign a huge success. Toys will be collected and picked up by local Marines who will distribute them to hundreds of agencies requesting support for Las Vegas and Nye County area children.

The following are examples of toys Marines always need:

- Bicycles for boys and girls
- Makeup kits for girls
- Hockey sticks or skate boards for boys
- Small boom boxes or radio/compact disc players.

Toys will be collected until mid-December so while you're out holiday shopping, please consider picking up a toy for a child in need. If you have any questions about Toys for Tots, please contact Kirsten Kellogg at (702) 295-1821.

### NNSS Bracing for Upcoming Flu Season

- The flu is generally spread from individual to individual by viral-laden droplets and secretions from the upper respiratory tract of the infected person; cold or rainy weather has nothing to do with transmitting this virus. Inclement weather may force infected persons to congregate in closed spaces where the viral germs may be more easily spread.
- Washing your hands is one of the best ways to prevent the transmission of harmful viruses. Covering your mouth and nose with a tissue when you sneeze or cough will go a long way to decreasing the amount of infected droplets spread to others. Also stay away from those who have the flu within the first few days when persons are most communicable.
- Staying healthy and keeping your immune system in tip-top shape also protects you from many infections. Getting adequate sleep, drinking plenty of fluids and eating properly will help keep your body in the best condition to fight infection.
- Finally, the single most effective action to prevent influenza is getting your seasonal influenza vaccination every year in accordance with CDC recommendations.



# NNSS FIRE & RESCUE

## Fire Stations Mark Transition to New Era of Emergency Service at NNSS

The official opening of two new fire stations at the Nevada National Security Site (NNSS) in October 2010 was important for more than just giving shelter to a growing fleet of emergency vehicles that serve the NNSS mission. It marked the transition of emergency service as it was



known at the former Nevada Test Site to a highly-specialized, highly-trained corps of professionals who have earned the respect of their firefighting counterparts across Nevada.

"Back in the day, we didn't have a lot of influence in the area. It was frustrating to see

everyone else evolving as we sat in limbo," said NNSS Fire Chief Charles Fauerbach of the fire department's early history. "But we've seen a lot of change. Almost all of it has been positive."

That history actually began in September 1951 with the creation of a civilian fire station at Knothole and Ranger Avenues on the Site to augment a military fire station located at Desert Rock airstrip. The first fire station had just five firefighters – Atomic Energy Commission firemen from Los Alamos National Laboratory – who volunteered their service under the first fire chief, Leo Martin.

With nuclear testing hitting full stride in 1954 and the population of the site at its peak, a full time fire station was built. Firefighters were trained to deal with vehicle, structure and aircraft fires on a regular basis. Still, Emergency Medical Service (EMS) did not exist within the fire department. Medical service was provided by former military corpsman, Fauerbach said.



By the 1960s, the site had six fire stations with more than 120 firefighters and 10 medical stations with over 65 paramedics. "At that time, the Test Site led the country in technological advancements in emergency response. It took a while for southern Nevada to catch up," Fauerbach said.

### Leaner Times

The 1970s would see all that change however as testing was scaled back. Staffing decreased until the 1990s when nuclear testing all but went away at NNSS. "We got out of the aircraft business around 1992 when the labs stopped flights to the Site," Fauerbach recalls. "We decided to consolidate our fire and EMS services in 1996 because it made the most sense."

Still, fire department officials did see a need to push for more rigorous programs to maintain certifications. The EMS portion of the department was first with the training standards and equipment being brought up to the level of state requirements. Then came the fire service, which was seeing its role evolve further into wildland firefighting, hazardous materials response and technical rescue.

The 1990s saw the acquisition of uniforms in the department, along with more specialized equipment to deal with the growing number of emergency response situations encountered both at the Site and in other parts of Nye County, where the NNSS Fire and Rescue Department maintains interagency agreements.

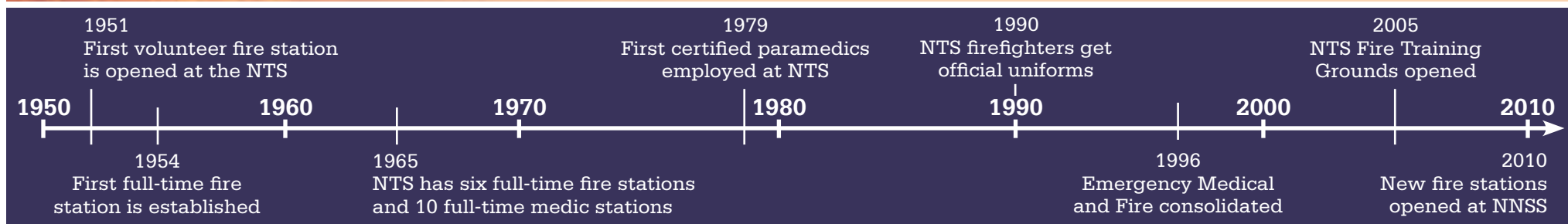
"We trained to excel in many areas," Fauerbach said. "That included establishing a technician level (hazardous materials) team. All of our firefighters also trained to some level of Emergency Medical Technician (EMT) qualifications. We became quite good at handling everything from traffic accidents and fires on (U.S.) 95 to mutual aid responses to communities in Nye county. For a lot of these places, we're the first response."

### Resurgence

The 2000s brought about an increased interest in qualifications for the NNSS Fire and Rescue personnel. Training was extended to include technical rescue such as confined space, trench, structural collapse and swift water rescue. Firefighters became skilled in heavy machinery and bus rescue as well as high-angle and low-angle rope rescue.

NNSS Fire and Rescue firefighters also received more wildland fire training, certifying to equivalent levels of the U.S. Bureau of Land Management and U.S. Forest Service firefighters. "For a structural firefighting department with wildland firefighting capabilities, we became the model to follow," Fauerbach said.

In 2005, the department opened its NNSS Fire Training Grounds





where firefighters and paramedics practice training on everything from vehicle and aircraft fires to tanker leaks and vehicle extractions.

NNSS Deputy Chiefs John Gamby and John Rynes helped oversee the acquisition of numerous props for the training ground, among them helicopter and truck fuselages, buildings for repelling and rescue, underground trenches and building mazes, and nuclear firefighting support buildings. Most of the equipment was either donated or purchased for \$1. The department even acquired a donated tour bus to give firefighters and paramedics experience in mass casualty response.

### Highly-Trained, Highly-Equipped

The training resurgence has also brought about an increase in technology and resources available to the NNSS Fire and Rescue. The department has acquired numerous wildland firefighting vehicles, as well as a breathing air trailer, mobile command post and other support vehicles.

Firefighters also benefit from such resources as cameras, which are placed at strategic locations around the NNSS that offer lookout capabilities for lightning strikes and other emergency situations, and monitored by the OCC. The early look gives firefighters an edge in responding to emergencies across the 1,350 square mile site.

"We've had to become more self-sufficient over the years, but in doing so we're able to respond faster and get things handled quicker without the need for outside help," Fauerbach said.

Today, NNSS Fire and Rescue responds to nearly 400 calls annually. The department responded to 31 fires in 2005; 18 fires in 2006 – an amount which fluctuates, but typically involves a majority of wildland fires. The department's robust Fire Prevention Program, headed by Fire Marshal Jim Brown, has prevented most structure fires, with only one or two occurring in the last decade, Gamby said.

The two new fire stations house 69 total employees now, including administrative staff, and a fire command structure that has many personnel performing multiple duties. Assistant Chiefs, Battalion Chiefs and Fire Captains oversee firefighting and emergency services operations from the front lines. Even NNSS Fire Chiefs, Deputy Chiefs and Fire Marshal could be called on to respond to an incident. Fauerbach insists the new approach is indicative of the high level of training the firefighters and paramedics receive at the Site.

"Our guys exemplify a level of commitment to the safety of Site workers that equals or exceeds any municipal department," Fauerbach said.

Most NNSS firefighters have at least five to 10 years experience. The increased focus on training also has created opportunities for the department to take in interns who have then trained up to become full-time members of the NNSS Fire and Rescue.

The evolution of the Site's department has seen it become one of the most highly-trained, high-equipped fire units in the region.

## NNSS Opens the Doors to Two New Fire Stations

In October, the National Nuclear Security Administration Nevada Site Office (NNSA/NSO) and National Security Technologies (NSTec) helped officially open the doors on two new fire stations at the Nevada National Security Site (NNSS).

In two separate ceremonies, fire officials and dignitaries "uncoupled the fire hose" – the equivalent of cutting the ribbon – on Station No. 2, located in Area 6, and Station No. 1, located in Mercury.

The new stations will house multiple engines, trucks, trailers and other equipment the department uses to serve its many missions, among them wildland firefighting, vehicle and structure firefighting, hazardous materials intervention and heavy rescue. The stations, which were completed more than \$7 million under budget, replace those previously in use since the 1960s.

### How would you describe the evolution of the Fire Service at NNSS?



Chief Fauerbach

**Chief Fauerbach:** "It's been an interesting ride. Back in the day, we didn't have a lot of influence in the area and it was frustrating to see everyone else evolving as we sat in limbo. But we've seen a lot of change, and almost all of it has been positive. We're the best-trained department in southern Nevada, and we've learned to do more with less."

**Chief Gamby:** "I've been impressed with the pride in our department – it has gone way up. With all of the guys, over the last five years, you've seen the pride really expanded."

### What are you most proud of in your 30 years of service?

**Chief Gamby:** "Getting the two fire stations built, and expanding the training grounds. It's been a long time for the stations – thinking back to 2001 when we were working on the justification for the fire department. And seeing our training become more hands on and grow into what it is has been the most satisfying thing for me."



Chief Gamby

**Chief Fauerbach:** "Our cadet-summer internship program. Each year, we get to pick a summer intern. In the past, this was someone who just came out here to gain some knowledge of the Site. But over the past three years, we've been able to take a person – a cadet – with no experience and train them up, through our various training programs, to become full-time employees of the department. We've been in able to bring in highly-motivated young firefighters who help our older folks by giving them someone to mentor. It helps our department across the board, and I hope it's something we're able to continue."

## NNSS (NTS) Fire Chiefs

- Leo Martin (1954-1979) • Ray Goodman (1979-1989)
- Tim Moore (1989-1993) • George Conrad (1993-1996)
- Hank Hill (1996-2001) • Charles Fauerbach (2001-present)



## Waste Management Activities at NNSS: Safety Always Comes First

Maybe another “S” should have been added during the recent name change of the Nevada Test Site to the Nevada National Security Site (NNSS); this one stands for “Safety,” which is critical to the success of the U.S. Department of Energy (DOE)’s waste disposal program at the NNSS.

DOE and U.S. Department of Defense sites across the United States are aggressively addressing the environmental legacy remaining from historic nuclear weapons research, testing and production. These activities generate low-level (LLW) and mixed low-level radioactive waste (MLLW). And while some of this radioactive waste can be disposed at commercial facilities, the NNSS Area 5 Radioactive Waste Management Site (RWMS) provides additional disposal services that are essential to the DOE Complex.

And through all of this effort, one thing always holds true: Attention to safety and regulatory compliance equal success.

“We maintain open communications with generators and State regulators to ensure that everything is being conducted safely on a daily basis,” said DOE Nevada Site Office Federal Project Director Frank DiSanza.

### The Key to Success

Long before any waste can be shipped and disposed, several rigorous reviews, inspections and certification processes must be conducted to ensure that everything – from characterization, packaging and transportation to disposal and monitoring – is in accordance with NNSS Waste Acceptance Criteria (NNSSWAC).

DOE Nevada Site Office Radioactive Waste Acceptance Program (RWAP) auditors ensure that these thorough reviews are conducted and that all generator policies and procedures meet or exceed NNSSWAC, which includes requirements set forth by the U.S. Department of Transportation, the Resource Conservation and Recovery Act (RCRA), and other federal, state and local laws and regulations. RWAP conducts comprehensive evaluations at the Generator’s facilities to



Waste Management personnel at NNSS have rigorous safety processes in place for disposing of low-level waste at Area 5 RWMS.

verify that worker qualifications and processes are accurately reflected in the documentation submitted. This includes visually inspecting proposed waste streams and observing the methods used to characterize the waste.

### Road Trip

Generators must ensure waste is packaged and transported in a safe and compliant manner, as detailed in NNSSWAC and U.S. Department of Transportation guidelines. Generators and their contracted shipping carriers must consider such things as packaging, routing, shipping documentation, permits, etc.

When the waste shipment arrives at the NNSS Area 5 RWMS, Disposal Operations personnel verify the shipping documentation matches previously approved paperwork. Each truck, trailer and container is then surveyed to ensure security seals are in place and the package is intact and appropriately labeled. And to further ensure compliance of the waste, packages may be visually inspected using on-site x-ray technology. Waste may be rejected and returned to the generator if anything is found to be out of compliance with the NNSSWAC during these inspections.

### Disposal Time

Now that the waste has passed its final

inspection, the waste truck is allowed to access one of the several excavated disposal cells within the Area 5 RWMS. Waste is scanned and positioned within a grid system in the appropriate cell. The 20’ x 20’ grid system uses letters and numbers to locate waste packages once covered with soil. This tracking system helps waste personnel monitor the accumulation of radionuclide levels, and, if need be, retrieve waste packages.

After waste disposal, experts continue to monitor the air, groundwater and soil for any migration of contamination into the surrounding subsurface environment.

### Safety on the Mind

When it comes down to it, the success of the Nevada Site Office Waste Management Program hinges on safety at every stage. From the point of generation to final disposal at NNSS, the responsible handling of radioactive waste requires thorough evaluations, characterization, inspections, monitoring, and adherence to strict federal, state and NNSS agreements and regulations. Attention to these details contributes to the safety of workers, the public and the environment and is key to the Nevada Site Office mission of providing disposal services vital to the cleanup of the nuclear waste complex.

## NNSS Supports Complex-Wide Cleanup of Low-Level Waste

Low-level radioactive waste disposal at the Nevada National Security Site (NNSS) has recently gone into high gear as a result of American Reinvestment and Recovery Act funding, which sparked an acceleration of cleanup work throughout the U.S. Department of Energy (DOE) Complex, as well as the need to expand waste disposal capabilities at the NNSS Area 5 Radioactive Waste Management Site (RWMS).

Recovery Act funds account for nearly half of the \$22 million the Environmental Management Program at the Nevada Site Office needed to operate the Area 5 RWMS this fiscal year.

The Nevada Site Office ramped up disposal operations to allow for up to 318,000 cubic feet of low-level and mixed low-level waste per month at the Area 5 RWMS. The waste originates from 11 sites conducting remediation work, including the NNSS. This increased amount is nearly 90 percent more than the normal monthly volume that Area 5 Disposal Operations typically buries. Of the total volume disposed this fiscal year, waste generated by remediation activities funded by the Recovery Act at the NNSS and other DOE locations makes up “more than 60 percent of the volume,” according



Seventeen percent of the Recovery Act waste disposed at the Area 5 RWMS was generated by cleanup activities on the Nevada National Security Site. The waste seen here consists of beams and doors from dismantled nuclear rocket development facilities.

to Federal Sub-Project Director, Jhon Carilli.

Nevada National Security Site remediation projects and other generator sites who are striving to reach their cleanup goals faster are working closely with National Security Technologies (NSTec), the management and operating contractor for the NNSS, to ensure shipping and disposal processes run as efficiently as possible. The NNSS has made several logistical improvements, according to NSTec Radioactive Waste Program Manager John Wrapp, such as opening a new trailer drop staging area to optimize use of shipping companies and disposal operations resources at the Area 5 RWMS. A new access point into the RWMS was also added to handle increased waste volumes. The generator sites are making provisions as well, including scheduling shipments so that loads are distributed evenly throughout the week.

As of July 2010, more than 1.1 million cubic feet of Recovery Act waste was accepted at the NNSS last fiscal year. The total Recovery Act forecast for the year is 1.42 million cubic feet. In total, the NNSS will support the DOE Complex by disposing 2.23 million cubic feet of waste.

# U1A Passes Cat III Start-Up Phase; Conducts Operations

*First Subcritical Experiment in Four Years Deemed a Success*

Bacchus, a subcritical experiment conducted by Los Alamos National Laboratory (LANL) on September 15, will be known for more than just being the 24th subcritical experiment conducted to date at the Nevada National Security Site (NNSS), or the first since Unicorn was conducted on August 30, 2006.

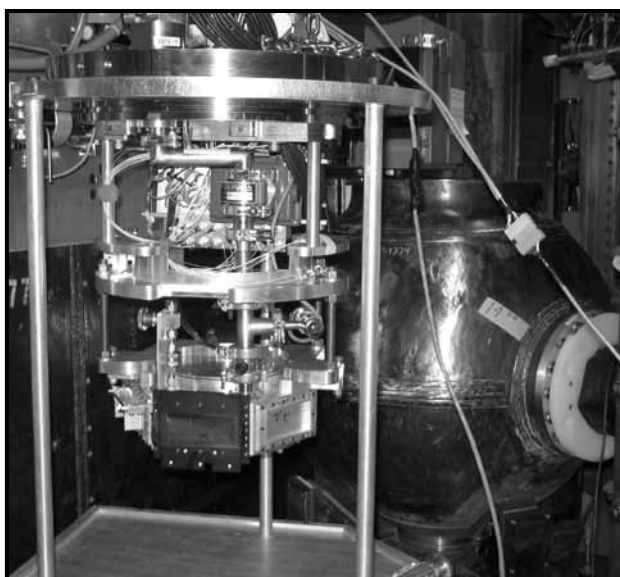
Bacchus is a major milestone, not only because of outstanding data recovery, but also because it marks the culmination of a huge effort since the Unicorn experiment to develop the safety-basis documents, procedures and processes, certify the staff members, start-up and operate the current experimental area of the U1a Complex as a Category III Nuclear Facility.

"Culmination" is perhaps an inappropriate term because the readiness process is ongoing; the intent is to maintain the current experimental area and other experimental areas as they are developed, as Category III Nuclear Facilities. In so doing, the effort and time required to field each experiment is reduced, thus greatly reducing the long-term costs to the Stockpile Stewardship program.

This is big news, amid similar start-up activities at the Device Assembly Facility's Criticality Experiment Facility (CEF) and the Joint Actinide Shock Physics Experimental Research (JASPER) Facility, as the U1a Complex team completed the start-up process, received approval from the U.S. Department Of Energy (DOE), National Nuclear Security Administration, Nevada Site Office for "hot operations" (operations with Special Nuclear Material [SNM]), and fielded and executed a subcritical experiment under Category III Nuclear Facility requirements on a schedule developed eight months earlier.

The "U1a Complex team" includes the Joint Nevada Program Office; LANL; Sandia National Laboratories, and National Security Technologies (NSTec), especially the Defense Experimentation and Stockpile Stewardship and Nuclear Operations Directorates. LANL is authorized to field and conduct subcritical experiments in the .05 Drift experimental area at the U1a Complex.

The U1a Complex at the NNSS is located in Area 1, approximately six miles north of the Area 6 Control Point. The heart of the U1a Complex is what one cannot see from the surface: an underground system of drifts (tunnels) and alcoves, which collectively are approximately 1.4 miles long. The U1a Complex is mined on one level, 963 feet below ground surface, at the base of two vertical shafts; the U1a shaft constructed in



A small racklet used to hold diagnostic equipment and the subcritical experiment package. The Racket is sealed inside the round steel vessel, in which the experiment is executed using a small quantity of chemical high explosive.

1988 and the U1h shaft constructed in 2004. The U1a and U1h shafts are equipped with mechanical hoists for access to the underground. A third vertical shaft, U1g, is located between the two main shafts and provides cross ventilation, utility and instrumentation access, and emergency egress.

The U1a Complex has served as a test bed for subcritical experiments since the Rebound experiment was conducted by LANL on July 2, 1997. Actually, before Rebound, a low-yield nuclear test, Ledoux, was conducted in September 1990 and a proof-of-concept experiment, Kismet, was conducted in March 1995 at the U1a Complex. Further nuclear tests were stopped by the moratorium on underground nuclear testing in 1992 and Kismet did not include SNM.

Special Nuclear Material, such as plutonium, is used in nuclear weapons. Subcritical experiments are conducted to ensure continued safety and reliability of the United States' stockpile of nuclear weapons. Subcritical experiments do not reach "criticality" where a self-sustaining nuclear chain reaction would occur; rather, these experiments examine the behavior of small amounts of SNM when shocked by chemical high explosives.

Several diagnostic tools, all of which are complementary, are used to capture the experimental data. The primary diagnostic tool now used at the U1a Complex is two large flash x-ray machines termed "Cygnus," after Cygnus X-1, a strong x-ray emitter in the constellation Cygnus. The Cygnus x-ray machines generate the x-rays for radiographs of the shock effects on the SNM at a precise time after detonation of the chemical high explosives. Data obtained in the subcritical experiments are used in computer models of nuclear weapon performance in lieu of actual nuclear testing.

So what is a Category III Nuclear Facility? A Nuclear Facility means "a reactor or a nonreactor facility where an activity [e.g., subcritical experiment] is conducted for or on behalf of the Department of Energy and includes any related area, structure, facility or activity to the extent necessary to ensure proper implementation of the

requirements established by this Part," referring to Title 10 Code of Federal Regulations (CFR) Part 830, *Nuclear Safety Management*, and specifically to Subpart B, *Safety Basis Requirements*. In this case, the U1a Complex .05 Drift experimental area is a nonreactor Nuclear Facility and Category III limits the amounts of various radioactive isotopes present to be between specified thresholds. For Plutonium 239 (Pu239), the primary isotope used in subcritical experiments, the lower threshold amount for a Category III Nuclear Facility is 8.4 grams and the upper threshold amount is less than 900 grams; that is, an amount less than 8.4 grams constitutes a Radiological Facility and an amount of 900 grams or greater (up to an upper threshold) constitutes a Category II Nuclear Facility.

The huge effort expended by the U1a Complex team to reach Nuclear Facility readiness and execution of the Bacchus experiment included initially a Readiness Verification and a Contractor Operational Readiness Review. Confirmation of readiness by the Management Readiness Confirmation Teams (MRCTs) was followed by an Operational Readiness Review. Approval for hot operations followed.

On the near-term for the U1a Complex, are the Barolo A and Barolo B subcritical experiments, followed by unspecified activities to maintain the Safety Basis for the .05 Drift experimental area.

## Milestones

### National Security Technologies

**40 Years:** Charles McNeel, Jesusita Sandoval, Nira McCoy, Robert Myles

**35 Years:** Eyston Petersen, James Bell

**30 Years:** Frank Spenia, John Gamby, Bart McGough, Bernard Bellow, David Milligan, Harold Davis Judith Scrogum, Kevin Forcade

**25 Years:** David Hando, John Blanco, Marlon Crain

**20 Years:** David Patterson, Keith Doering, Sandra Kiehl, David Young, Elizabeth Calman, Gerald Dries, Randall Ferguson, Susan Livenick

**15 Years:** Lawrence Ayala, Michele Vochosky, Matthew Weaver

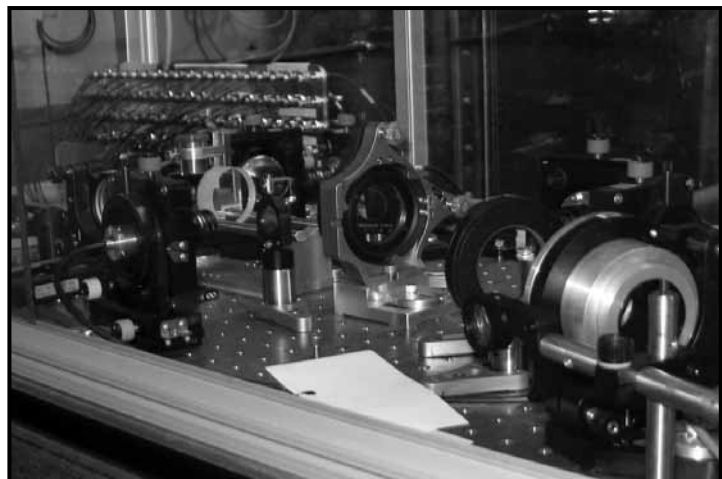
**10 Years:** Beth Shuffield, Christopher Suerdieck, Daniel Crays, Daniel Kranjcevic, David Garcia, Deborah Darr, Don McIntosh, Edward Bane, Forrest Cannon, Gary Sherfield, George LeRoy, Gerald Sill, Joseph Sears, Kerry Mackey, Piotr Wasiolek, Roland Benton, Russell Owens, Ryan Campbell, Scott Cline, Terry Choyce, William Nixon, Carl Jackson, Dennis Waldrop, Katherine Boles, Marcus White, Michael Butchko, Paul Perez, Richard Venedam, Timothy Rearich

**5 Years:** Johnny O'Neal, Alice Bair, Billy Ray Johnson, Colleen McManus, Daryl Magers, George Henckel, Maria Juarez, Marlis Breikreutz, Michael Salloum, Nicole Verheyen, Rebecca Davis, Rica Salcedo, Sharyn Namnath, Susan Gray.

### WSI Nevada

**30 Years:** Michael Privitera, Lee Schmardebeck

**5 Years:** Cathleen Bridenstine, Tia Wirth.



Velocity Interferometer System for Any Reflector (VISAR) is a diagnostic tool that determines the velocity of a moving material surface by measuring the Doppler shift in frequency of laser light as it is reflected from that surface.

# NNSS Employees Honored with Awards of Excellence

Several federal and contractor employees of the Nevada National Security Site (NNSS) charged with programs that support Stockpile Stewardship were honored recently with Awards of Excellence for their contributions to significant projects executed last year at the Site.

Roger A. Lewis, Sites chief performance officer from the National Nuclear Security Administration headquarters and Nevada Site Office Manager Steve Mellington joined National Security Technologies (NSTec) President Steve Younger, WSI-Nevada Senior Vice President and General Manager Dave Bradley, and Professional Analysis, Inc. (PAI) Program Manager Wayne Morris in recognizing the individuals and their departments at a

September ceremony.

The Defense Programs Awards of Excellence are given annually to individuals and groups who go above and beyond the normal course of business at the NNSS. They recognize achievements that have a significant positive impact on the Stockpile Stewardship Program.

The award program was established in 1982 to recognize individual or team(s) (federal and contractor staff are eligible for awards) for significant achievements in quality, productivity, cost savings, safety, or creativity in support of the nuclear weapons program.

Among the recipients included Fall Classic Planning and Execution Team, the Phoenix Full Function Test Team, Cygnus 1000th

Shot, (National Security Technologies) NSTec Security Team, Professional Analysis Inc. (PAI) Vulnerability Assessment Laboratory, Nevada Site Office "Dogs of OPSEC" and OPSEC Team, (Nevada Test Site) NNSS Security Team, Barolo Subcritical Experiment Team, Integrated Planning, Emergency Planning and Preparedness, Fissile Material Handling Group, National Ignition Facility (NIF) Target Area Operations, and WSI Nevada Team Environment, Safety and Health Section, among others.

Lewis presented representatives from each group a plaque honoring their accomplishments and recognized the members of their teams. Individual employees also received awards.



Margaret Cook receives the award for Integrated Planning from Roger Lewis (from left), Steve Younger and Steve Mellington.



WSI Nevada Lt. Kerry Wisniewski receives an Award of Excellence from Lewis, WSI Nevada Senior Vice President Dave Bradley and Mellington.



Lewis presents the Award of Excellence for OPSEC Security Awareness to Natalie Dahlberg, with PAI Program Manager Wayne Morris and Mellington.



Emergency Planning's William Possidente receives an award from Lewis, with his boss, J.D. Daniels, A.C. Hollins Jr. and his wife, Melodye Possidente, and Mellington.



Lewis presents the Award of Excellence to the Cygnus 1000<sup>th</sup> Shot Team.



Lewis and Steve Mellington pose with members of the Integrated Planning Team.

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## New Name for Site Continued from page 1

"For 60 years, this site has played a critical role in keeping our nation safe and secure. As we adapt to changing national security missions and work to transform a Cold War nuclear weapons complex into a 21st century nuclear security enterprise, this site is growing ever more important," D'Agostino said.

To commemorate the event, Administrator D'Agostino was joined by Senate Majority Leader Harry Reid; Nevada Representatives Shelley Berkley and Dina Titus; Warren Stern, director of DHS' Domestic Nuclear Detection Office; Kenneth A. Myers, director of DoD's Defense Threat Reduction Agency; Brian Nordmann Director of the State Department's Verification and Transparency Technologies Office; Stephen Mellington, manager of NNSA's Nevada Site Office; and Stephen Younger, president of National Security Technologies (NSTec), the management and operating for the Site.

The primary mission of the NNSS is to support NNSA's efforts to maintain the safety, security and effectiveness of the nation's nuclear deterrent without underground nuclear testing. Exercising the skills and capabilities required to accomplish that mission also helps provide

the nation with a unique capability to support a wide variety of additional national security missions.

By renaming NTS the Nevada National Security Site, NNSA is recognizing the expanding, critical and diverse role it plays in our nation's security. In addition to the critical work NNSS does in support of NNSA's nuclear security agenda, other government agencies have come to increasingly rely on the inherent capabilities and remote location of the Site to support all of our Nation's nuclear, energy, and homeland security efforts.

For example, DHS uses the site to train first-responders how to react in the event of an incident involving nuclear materials and test the next generation of radiation detection equipment for ports and border crossings. The DOD has long used the site as a location to understand how to detect and defeat fortified facilities constructed deep underground and conduct a wide range of chemical, biological and nuclear sensor detection work. Support of these and other national security missions is expected to grow as the NNSS continues to transform into a 21st century national security facility.