



ONEVOICE

October 2012

A Publication for the Entire Nevada Enterprise (NvE) Complex

WSI Team Captures Best Finish

The team rocked the competition and chiseled out an impressive second place finish recently in the Security Protection Officer competition.



See page 5.

NNSS Hosts Groundwater Open House

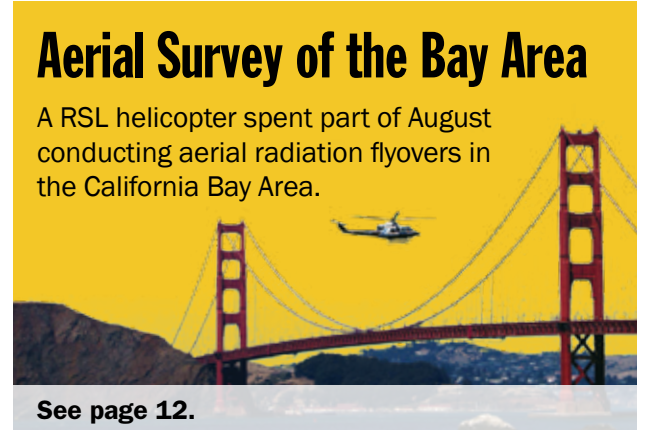
Groundwater was the topic of discussion at a recent open house.



See page 8.

Aerial Survey of the Bay Area

A RSL helicopter spent part of August conducting aerial radiation flyovers in the California Bay Area.



See page 12.

Enterprise Publication "ONEVOICE" Replaces Spotlight and SiteLines

By Jeff Donaldson and Lory Jones, ONEVOICE Editors

The Nevada National Security Site (NNSS) is comprised of more than 3,300 employees from various companies and contracts working together to perform some of the most vital national security work. For years, this work and the people who do it have been profiled in a variety of publications printed by their respective companies at the Site.

Beginning this month, two of the largest publications – the Nevada Site Office’s newspaper *SiteLines* and National Security Technologies’ (NSTec) employee newsletter *Spotlight* will merge into one newsletter called “oNeVoicE.” This new publication will reach out to all NNSS contractors to encompass the entire Nevada Enterprise (NvE).

The consolidation is a collaborative effort between the NSO and contractors NSTec, Navarro-Intera, the Joint Laboratories Office – Nevada (JLON, formerly JNPO) and WSI-Nevada that makes good business sense. The coordinated publication will eliminate duplication of efforts to cover NNSS stories and cut down on mailing costs. NSTec’s Workforce Enhancement and Public Affairs divisions will

manage oNeVoicE.

oNeVoicE is a result of the NNSA’s 2011 Strategic Plan. When NNSA Principal Deputy Administrator Neile Miller visited the North Las Vegas Facility in May, she discussed the importance of “shared faith.” That is, dedication to our mission by building on “OneNNSA,” a single integrated enterprise organized to complete

Continued on page 4

NNSA’s Defense Awards Honors Enterprise Achievements

On Sept. 13, the National Nuclear Security Administration (NNSA) presented its Defense Programs Awards of Excellence to various Nevada National Security Site (NNSS) programs.

NNSA Defense Programs Deputy Administrator Donald Cook and Nevada Site Office (NSO) Manager Steve Mellington joined NSTec President Raymond J. Juzaitis and WSI-Nevada Deputy General Manager Martin Glasser to honor recipients during the ceremony. All recognized Enterprise-wide individuals and their teams from Nevada and New Mexico for their remarkable accomplishments.

“The work Nevada does is extremely important to our nation’s security. I’m proud to be a part of this team,” Cook told those in attendance. Teams across the NvE could not be present, so at least one team member or team lead accepted the plaque on their behalf.



NNSA Defense Program Deputy Administrator Donald Cook presents Deborah Agüero an award as NSTec President Raymond Juzaitis looks on.

For more on Defense Awards, see pages 6-7.



NvE Executive's Corner

Steve Mellington,
NSO Manager



Welcome to ONEVOICE!

Welcome to this first edition of *oNeVoicE*. What you are reading represents a growing trend by our organization to ensure that everyone understands that we work as one. Each month this space will have a few thoughts from one of the leaders of the various organizations within the NvE enterprise.

I want to take a moment to thank everyone involved with some of our recent successes. We executed the Castor confirmatory experiment in U1a. The data, I'm told, was exceptional and will go a long way in supporting the Pollux subcritical experiment later this year.

I also want to tip my hat to the JASPER team. They conducted a very successful 100th shot. Again, quality data that helps support our stockpile stewardship program.

Drilling activities in support of our underground test area project have gone smoothly and safely. Work by these folk continues to add good solid data to our groundwater modeling programs.

The business side of the house has had some great successes in what we call "back-office consolidation." This paper is just one example. We've successfully migrated the Navarro-Intera email system over to NSTec. The rest of the contractors will follow shortly. Our federal records management is on track to be administered by NSTec as well. All in all, great work being done by great people.

Let me also take a moment to shift gears slightly. While we may work for the Federal government, different contractors, or national laboratories, we are all here for one purpose — to meet the national security needs of our nation through our work efforts at the Nevada National Security Site and our locations in California, New Mexico and Maryland.

I think it is important that I spend a moment talking about that word "security." Security is what we are about. It is not just in the name of our site or who we all work for, the National Nuclear Security Administration. Security is an attribute we all need to have as a part of our everyday work. Safety and security go hand in glove with our day-to-day work. We are more than conducting experiments that support our nation's security posture. We are secure in how we do our work, how we protect information, facilities and property. Whether it is watching to make sure a door shuts properly or ensuring the proper access protocols to nuclear material are in place; we are all responsible for security in one way or another.

With that comes the expectation that you all know you can speak up and report any matter to any level of management without fear of reprisal.

When it comes to safety and security, "If you see something, say something!"

Until next time,
Steve

Give the Gift of Life With Blood Donation

By Lory Jones, *ONEVOICE* Editor

Nevada Enterprise employees love to roll up their sleeves to give blood.

Lately, employees at the North Las Vegas Facility (NLVF) have been beating their own records by exceeding goals and pints set forth by United Blood Services (UBS). For example, the last blood drive at the NLVF, which occurred Aug. 22, collected 31 units from 23 successful donors — beating the goal of 27 units/21 donors!

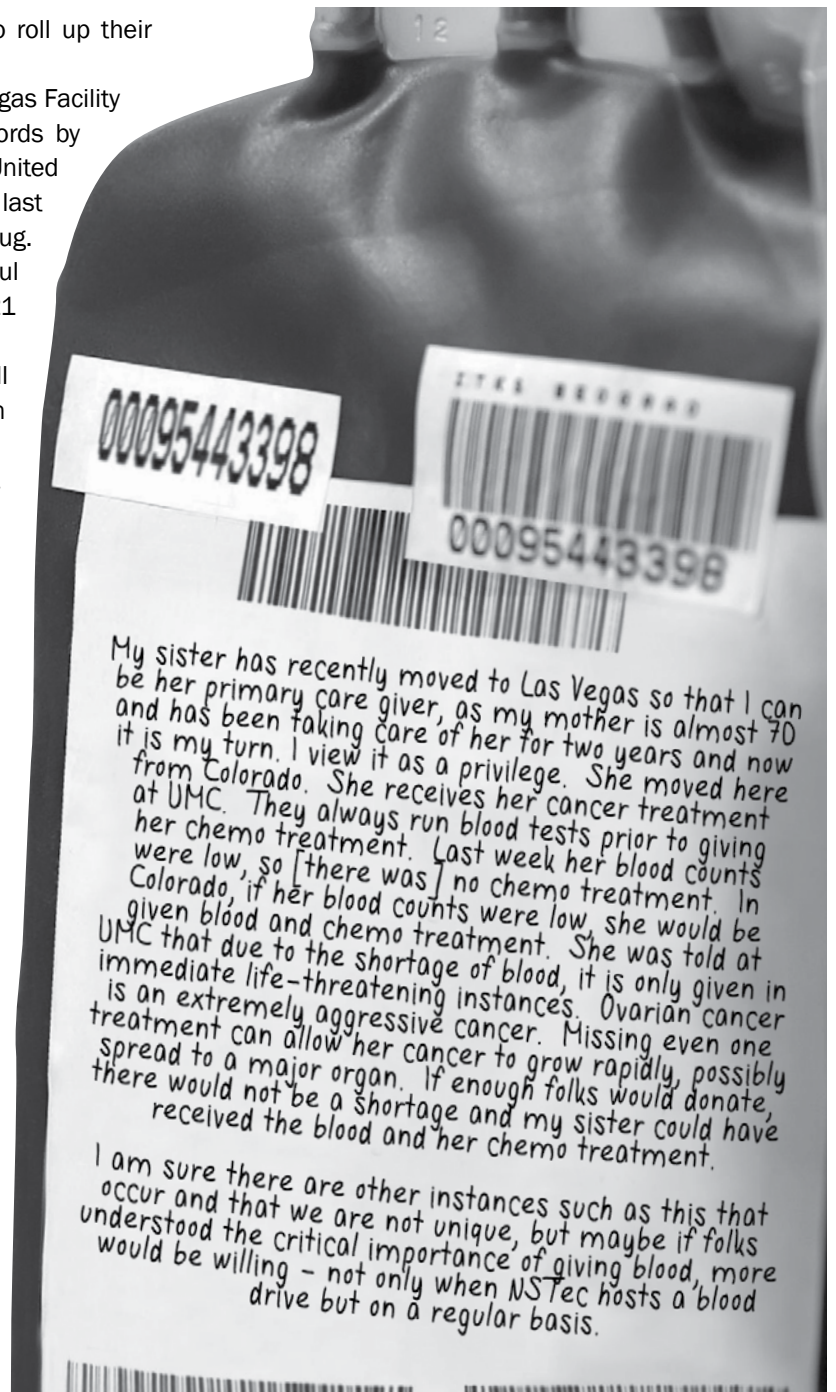
What's great about this event is that all NvE employees can donate, and have been doing so for some time.

United Blood Services reports that its blood supply is in constant jeopardy. There's more need for blood due to mishaps from outdoor activities, more traffic accidents, more cancer treatments, and other medical emergencies. A regular donor can donate whole blood six times per year; he or she can donate two units of red cells three times per year. The average number of donations in Las Vegas, for example? Only 1.5 times per year.

When she saw the Aug. 29 blood drive publicized in *The Front Page*, NSTec's Elizabeth Leonard had to share her story (right) on how blood donations are critical to the life of her sister, who has ovarian cancer.

If this gets you all "pumped up," mark your calendar: The next blood drive will be held Oct. 16 in the Mercury Cafeteria, from 10 a.m. — 2 p.m. On Dec. 12, UBS will return to the NLVF from 7 a.m. — 12 p.m. What a great holiday present for our local blood bank.

For more information, contact Lory Jones at (702) 295-1948, or at jonesla@nv.doe.gov.



ONEVOICE

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Research at NNSS Could Boost Space Power Systems

Nevada Experiment Demonstrates Prototype for Simple, Robust Space Reactor

By Darwin Morgan, Nevada Site Office

A team of researchers, including engineers from Los Alamos National Laboratory (LANL), have demonstrated a new concept for a reliable nuclear reactor that could be used on space flights at the National Nuclear Security Administration (NNSA) Nevada National Security Site (NNSS).

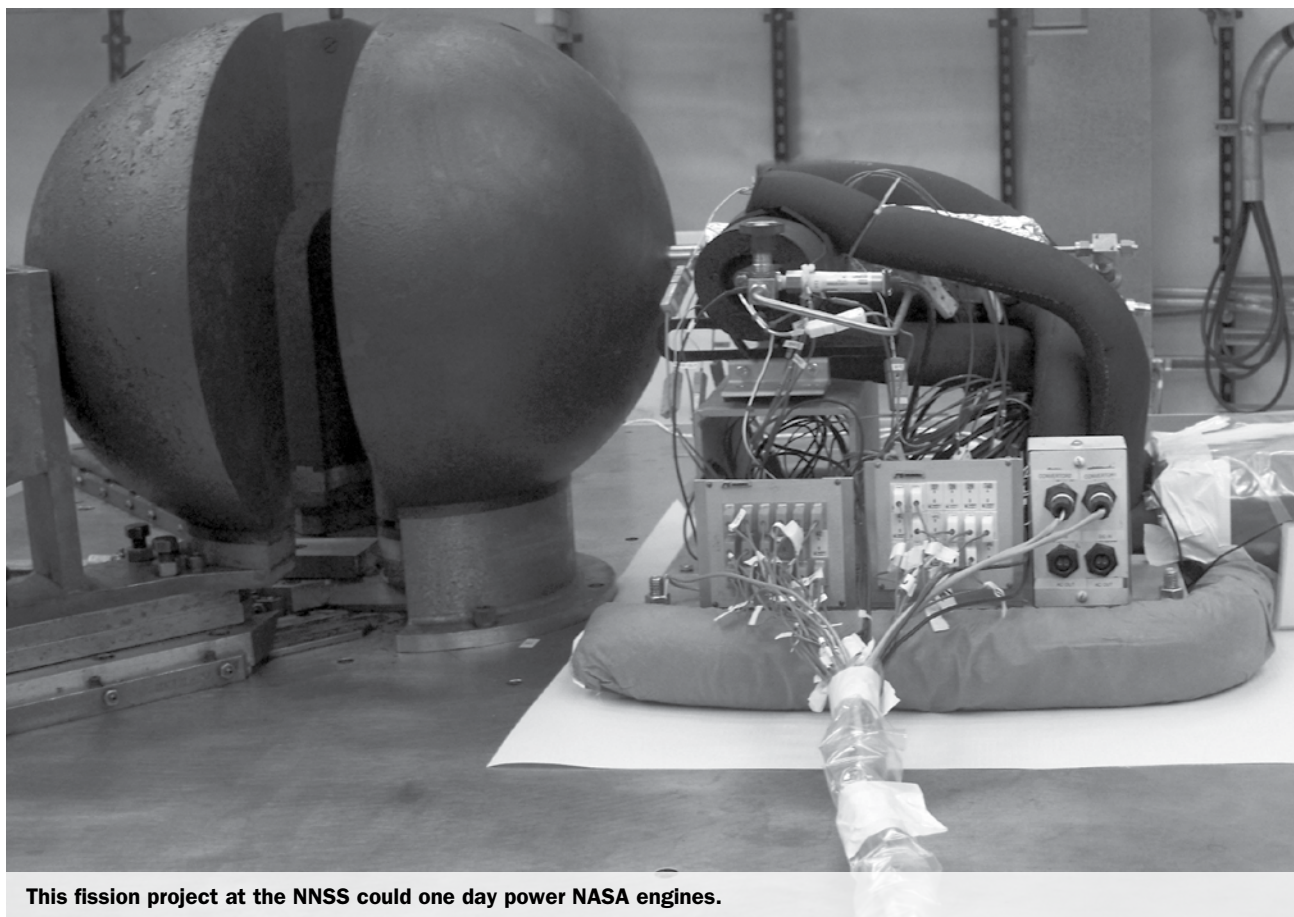
On Sept. 13, the research team demonstrated the first use of a heat pipe to cool a small nuclear reactor and then harvest the heat to power a Stirling engine at the NNSS's Device Assembly Facility (DAF) near Las Vegas. The Demonstration Using Flattop Fissions (DUFF) experiment produced 24 watts of electricity. A team of engineers from Los Alamos, the NASA Glenn Research Center (NASA Glenn) and National Security Technologies, LLC (NSTec) conducted the experiment.

authorization from the NNSA.

DUFF is the first demonstration of a space nuclear reactor system to produce electricity in the United States since 1965, and confirm the basic nuclear reactor physics and heat transfer for a simple, reliable space power system.

"The nuclear characteristics and thermal power level of the experiment are remarkably similar to our space reactor flight concept," said LANL engineer David Poston. "The biggest difference between DUFF and a possible flight system is that the Stirling input temperature would need to be hotter to attain the required efficiency and power output needed for space missions."

"The heat pipe and Stirling engine used in this test are meant to represent one module that could be used



This fission project at the NNSS could one day power NASA engines.

Heat pipe technology was invented at Los Alamos in 1963. A heat pipe is a sealed tube with an internal fluid that can efficiently transfer heat produced by a reactor with no moving parts. A Stirling engine is a relatively simple closed-loop engine that converts heat energy into mechanical work via the compression and expansion of gases. Using the two devices in tandem allowed for creation of a simple, reliable electric power supply that can be adopted for space applications.

Researchers configured DUFF on an existing experiment, known as Flattop, to allow for a water-based heat pipe to extract heat from uranium. Heat from the fission reaction was transferred to a pair of free-piston Stirling engines manufactured by Sunpower Inc., based in Athens, Ohio. Engineers from NASA Glenn designed and built the heat pipe and Stirling assembly and operated the engines during the experiment. Los Alamos nuclear engineers operated the Flattop assembly under

in a space system," said Marc Gibson of NASA Glenn. "A flight system might use several modules to produce approximately one kilowatt of electricity."

For comparison, the plutonium-based power supply aboard the recent NASA Curiosity Rover generates 110 watts of power. The ability to potentially generate 10 times more electricity using a material that is more readily available than plutonium makes the system demonstrated by DUFF desirable for future space missions.

"A small, simple, lightweight fission power system could lead to a new and enhanced capability for space science and exploration," said LANL project lead Patrick McClure. "We hope that this proof of concept will soon move us from the old-frontier of Nevada to the new-frontier of outer space."

NNSS Advisory Board Adds New Members

By Kelly Snyder, Nevada Site Office

The Nevada Site Specific Advisory Board (NSSAB), a U.S. Department of Energy (DOE) chartered advisory board, has increased its community reach in Southern Nevada by adding members from Henderson, Panaca, Mesquite, and Pahrump to its roster of Las Vegas and Beatty participants. This community-based board provides recommendations to the Environmental Management Program regarding environmental clean-up activities at the Nevada National Security Site (NNSS).

NSSAB members meet once a month and provide recommendations from a community perspective on radioactive waste management disposal and transportation activities, the effects of historic nuclear testing on the groundwater at the NNSS, and other environmental remediation activities.

"It's very rewarding to be part of the advisory board by helping improve clean-up activities at the NNSS through recommendations to the DOE," said Kathleen Bienenstein, NSAAB chair.

The NSSAB has been providing the Nevada Site Office recommendations for more than 15 years. These recommendations have created efficiencies, saved tax-payer dollars, and ensured the public had a voice in our clean-up activities.

In addition to local recommendations, the NSSAB also participates in DOE Environmental Management (EM) activities at Headquarters in Washington, DC. Two members traveled to Washington this month to attend a national advisory board meeting. DOE has eight advisory boards total.

During the meeting, the NSSAB representatives were able to present their Nevada perspectives to Principal Assistant Deputy Administrator David Huizenga. Huizenga is responsible for the management and oversight of the DOE EM, the world's largest environmental remediation program.

All NSSAB meetings are open to the public. The next meeting is set for Nov. 7 at 5 p.m. at the National Atomic Testing Museum located at 755 E. Flamingo Rd. in Las Vegas, Nev. Topics to be discussed include the NNSS Site-Wide Environmental Impact Statement, U233 Waste Shipments from Tennessee, and groundwater characterization activities.

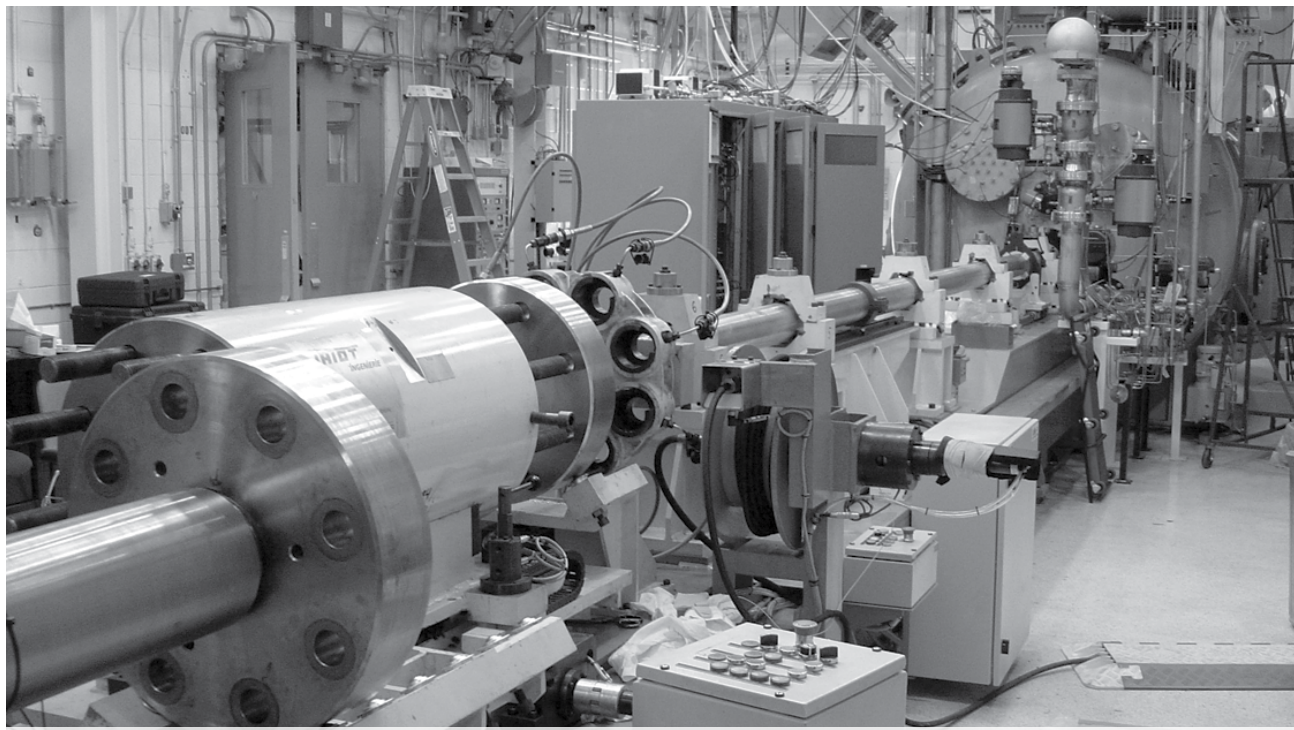
For more information about the NSSAB, visit: www.nv.doe.gov/nssab.

JASPER Celebrates 100th Shot at the NNSS

By Jeff Donaldson, *ONEVOICE* Editor

The Nevada National Security Site (NNSS) conducted the 100th experiment of the Joint Actinide Shock Physics Experimental Research (JASPER) Facility last week – a significant milestone in the National Nuclear Security Administration's (NNSA) mission to assess the reliability of the nation's nuclear weapons stockpile.

The 100th experiment, or shot, will help generate information that scientists at Lawrence Livermore National Laboratory (LLNL) will use to determine how plutonium would react under specific pressures, temperatures and strain-rates. The shots are conducted using a two-stage gas gun to fire projectiles into plutonium targets in a highly-controlled environment.



The JASPER two-stage gas gun measures the properties of nuclear weapons in a highly controlled environment.

"I applaud the work done by the men and women who have taken part in this remarkable milestone," said Don Cook, NNSA deputy administrator for Defense Programs. "Data gathered from experiments conducted on JASPER and the other tools and facilities throughout the national nuclear security enterprise helps NNSA meet its mission in ensuring the safety, security and effectiveness of the nuclear deterrent without underground nuclear explosive testing. These experiments also help achieve President Obama's nuclear security objectives."

JASPER experiments are conducted at the NNSS by LLNL for NNSA, in conjunction with Joint Laboratory Operations-Nevada (JLON), a collaboration of LLNL and Los Alamos National Laboratories, and National Security Technologies (NSTec), the management and operating contractor for the Site.

"Shot 100 is a significant milestone for the JASPER project," said Laura Tomlinson, assistant manager for National Security for the Nevada Site Office for the NNSA. "It shows a strong integrated Laboratory, contractor, and federal team effort that produce the highest quality plutonium data."

"JASPER has a long history of providing highly accurate materials data for the National Stockpile Stewardship Program," said Jim Holt, director of Defense Experimentation and Stockpile Stewardship for NSTec. "The JASPER Project Team, led by NSTec Project Manager Lane Trammell, has done an outstanding job of mitigating technical and operational issues to keep

JASPER on schedule and on budget, while continuing to conduct experiments providing important relevant data on materials properties."

The Nevada National Security Site, formerly known as Nevada Test Site, has a long and storied history of nuclear weapons testing, both above and below ground. However, a moratorium signed by the president in 1992 put an end to that type of testing. This required the development of newer methods for ensuring the nation's weapons stockpile remains safe and reliable.

The JASPER gun fires projectiles into targets within confinement chambers at high velocities, up to eight kilometers per second, about the same speed as a bullet fired from a hunting rifle. This allows for the measurement of data pertaining to the properties of nuclear weapons. Data from JASPER experiments



Workers prepare the JASPER gas gun for use in the experiment.

is used to determine material equation-of-state and to validate computer models of material response for weapons applications.

"The quality and accuracy of the data is exceptional, considered best in class, and contributes vastly to our understanding of the equation of state of plutonium," Tomlinson said. "With the sustained success of JASPER, we help to ensure the safety and reliability of the nuclear stockpile. Congratulations to the entire JASPER team."

The first JASPER shot involving plutonium was conducted in 2003. Since then, the JASPER team has developed new diagnostics and identified new experimental configurations that have aided in exploring various scientific regimes. JASPER has been operational since March 2001. Of the 100 shots that have been executed, 41 have used plutonium. Surrogate materials were used in the others.

The two-stage gas gun consists of a first-stage breech containing gunpowder and a pump filled with a light gas such as hydrogen, helium or nitrogen; and a second-stage evacuated barrel for guiding the high-velocity projectile to a target containing radioactive or surrogate material. Hot gases from the burning propellant drive a heavy piston down the pump tube, compressing the gas. At sufficiently high pressures, the gas eventually breaks a rupture valve and enters the narrow barrel, propelling a projectile toward the target.

When the projectile hits the target, it produces a high-pressure shock wave. In a fraction of a microsecond, the shock wave reverberates through the target. Diagnostic equipment, triggered by the initial wave, measures the properties of the shocked material.

ONEVOICE *Continued from cover*

the NNSA mission. The NSO's goal is for managers to integrate people, work processes and infrastructure into one culture that encourages everyone to achieve NvE goals. In that sense, *oNeVoicE* is a communications medium that embraces this goal. Look at *oNeVoicE*: Can you find "NvE" therein?

At first glance, *oNeVoicE* will appear as the same size and format as *SiteLines*. But look a little closer. The design and layout will be more dynamic. Articles about our mission to national security and our employees will

now include everyone who works to support the NNSS. Employees will receive their news from one primary source. Just as with *SiteLines*, employees will receive *oNeVoicE* through interoffice mail, as well as online through the NSO website, www.nv.doe.gov and www.nstec.com. Unlike *Spotlight*, employees will no longer receive newsletters at home, eliminating mailing costs.

What does remain is the same high-quality writing, photography and in-depth look at our teams and projects, as well as listings of new hires and milestones.

Spotlight's employee feature "In the *Spotlight*" will now become "NvE Voices," which welcomes features from NvE employees. But most importantly, we will continue to inform you about the Nevada National Security Site's mission to our country's security and recognize everyone's achievements.

oNeVoicE will be a new and exciting venture, for readers and NvE personnel. Some of us may miss the old *Spotlight* and *SiteLines* at first. But once you read *oNeVoicE*, you may agree: Change IS good.

WSI-Nevada Team Grabs Second Place in DOE Event

Solid Performance Impresses the Competition

By Scott Damron, Director Security Services, WSI-Nevada

WSI-Nevada rocked the competition and chiseled out an impressive second place finish recently in the 40th annual U.S. Department of Energy (DOE)-sponsored Security Protection Officer competition, held at the Savannah River Site (SRS) in South Carolina.

The 2012 DOE Security Protection Officer Team Competition (SPOTC) is the agency's signature security event. The 40th anniversary recognizes the evolution of a DOE security competition that began as a pistol marksmanship match for the DOE Security Inspector/Guard of that era. Over the decades, the SPOTC evolved, as did the development of the DOE protective force (ProForce) from a Security Inspector/Guard to today's paramilitary trained and physically fit ProForce members. Today, they operate in small tactical teams operating armored vehicles and machine guns, and using other specialized tactics, techniques, procedures and equipment.

The top three spots in the overall DOE SPOTC team competition have been historically won by teams from Idaho, Pantex, Savannah River Site (SRS) and Oak Ridge (OR). But this year's Nevada National Security Site (NNSS) team demonstrated extraordinary fitness, exceptional weapons marksmanship, and superior teamwork and tactics in giving the competition a surprising challenge for the top spot.

The NNSS SPOTC team was comprised of Lt. Tommy Zavala (captain), and SPOs Cory Adkins, Albert Fischetti, Richard Neil, Matthew Nicholas and John Smith. They were coached by training instructors Neil Cowley and Roger Proehl.

"Our team's professionalism and superior performance became the topic of discussion throughout the entire competition," said Dave Bradley, general manager of WSI-Nevada. "They wore a bulls-eye target on their back and every team in the competition kept a spotter with eyes on the NNSS Team."

Throughout the competition, the crowds grew larger as the competition grew fierce.

The top spots on the leaderboard changed regularly, and throughout, the NNSS Team continued to set the bar for other teams to chase. By the closing events, it became clear the title would be a three-way battle between NNSS, SRS and OR. "Remaining determined to achieve their objective - winning - our team displayed absolutely amazing poise, focus and discipline to continue to excel in event after event despite all the additional attention and pressure," said Zavala, the team captain.

In the closing day, the NNSS was trying to cut into WSI-Savannah's 25-point lead, but fell just short. The final standings were: Gold - WSI-SRS; Silver - WSI-NNSS; and Bronze - WSI-OR. The finish marked an outstanding accomplishment for the NNSS team.

"Although the SRS point lead was too large to overcome, the NNSS Team performance was nothing short of incredible, and I hoped they felt the energy and enthusiasm by the spectators as they crossed the finish line to take silver," Bradley said. "When you see our SPOTC team in the work place, please take a moment to acknowledge their outstanding success and congratulate them for their personal effort and sacrifice in preparing and participating in this demanding DOE competition—

they have done us proud!"



2012 SPOTC Team (from left): Training Specialist Neil Cowley, SPO John Smith, Lt. Tommy Zavala (Team Captain), SPO Matthew Nicholas, SPO Richard Neil, SPO Albert Fischetti, SPO Corey Adkins, Training Specialist Roger Proehl.

The competition events were challenging, and so was the weather. The competitors endured humidity, rain, wind, and changing cold and hot temperatures that ranged from the low of nearly 30 degrees early in the week to the high of nearly 90 degrees by the end.

Joint Nevada Program Office (JNPO) Becomes Joint Laboratory Office-Nevada (JLON)

By Danette Martinez, JLON

In July 2006, a Memorandum of Understanding (MOU) was established to align the Los Alamos National Laboratory (LANL) and Lawrence Livermore National Laboratory (LLNL) Nuclear Weapons programmatic work in Nevada under a single entity, the Joint Nevada Program Office (JNPO). This merger produced a successful organization created to build upon the specific strengths and expertise of each laboratory, while increasing efficiency and reducing costs to the nation's nuclear weapons program.

On May 10, 2012, a revised MOU was approved, affirming that both National Laboratories commit to maintaining a common infrastructure and management team under the new title of the Joint Laboratory Office - Nevada. In particular, the MOU now extends to the LANL

Global Security Program, in addition to the weapons programs of LANL and LLNL.

As a result, the Joint Nevada Program Office will now operate as the Joint Laboratory Office - Nevada (JLON). JLON will continue to provide laboratory management interface to the NNSA Nevada Site Office, National Security Technologies (NSTec) - the management and operating contractor for the Nevada National Security Site (NNSS) - and all other contractors within the Nevada Enterprise (NvE) to preserve the ability to direct and execute Laboratory experiments, and maintain core competencies for the performance of high-hazard work in Nevada. Each lab will maintain their own accountability and staff. Executing programs and projects in accordance with their plans and retaining

line safety responsibility.

JLON's emphasis remains on the safe, secure and successful execution of work. JLON also focuses on the proposal, creation and support of tactical and strategic initiatives to increase laboratory efficiency and effectiveness in Nevada. JLON will continue the utilization of common resources to support critical functions such as security and information technology, and provide logistics and infrastructure utilizing common NNSS and laboratory resources effectively in support of laboratory projects and programs.

The JLON management team is led by Richard Higgs, JLON manager and Scott Traeger, JLON deputy manager. Please call (702) 295-0926 for any inquiries related to JLON.

NNSA's Defense Awards Honors Enterprise Achievements

By **ONEVOICE Staff Reporters**

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"The work Nevada does is extremely important to our nation's security. I'm proud to be a part of this team," Cook told those in attendance. Teams across the NvE could not be present, so at least one team member or team lead accepted the plaque on their behalf.

National Criticality Experiments Research Center Start-up



Don Cook, Dirk Schmidhofer and Steve Mellington.

The NNSA met the challenge of readiness verification, start-up authorization and oversight of nuclear operations for the National Criticality Experiments Research Center (NCERC). The NCERC team was recognized for superior performance in overseeing and implementing the readiness process and start-up:

Robert Bangerter, Jr., Dirk Schmidhofer, Brian Clifton, Brian Fiscus, Timothy Henderson, William Pulse, Ronnie Alderson, Howard Goldin, Michael Marelli, Robert Mignard, Barry Mellor, Don Seaborg, William Suiter, Xavier Aponte, Jimmy Dyke, Thomas Enyeart, Lydia Im, Michael Plinski, Mike Collins, Jeffrey Haeberlin, Eric Amarescu, Craig Maki, Robert Henry, Jeffrey Cravens, Jerry McKamy, Stephen Scott and Jerry Hicks.

Nevada Site Office Integrated Management Council

The NNSA/NSO Integrated Safety Management (ISM) Council is a senior-level working group whose charter is to facilitate feedback and champion improvements to ISM implementation efforts across the NNSA/NNSS complex. The following team members were honored for the significant contribution to the defense programs as active participants providing critical mission feedback and improvements:

Raeford Phifer, Jr., Robert Bangerter Jr., Patricia Bodin, Stanley McCloskey, William Barrick II, Stephen Mellington, Steve Lawrence, Michael Kinney, Gerhardt Griess, Darryl Campbell, Paula Lynch, Wayne Kiehl, Julie Beck, Kelly Meureens, David Taylor, Tammam Cheetany, Stacey Alderson, Robert Eastmond, Jenny Chapman, Richard Shook, Earlie Rose, Jon Spezialetti, Dave Bradley, George Barr, Cindy Farinholt, Scott Traeger, Rick Higgs, David Rodriguez, Dan Bozman and Art Walker.

JASPER Integrated Oversight Team



Charlotte Carter (middle), Don Cook and Steve Mellington.

The federal Integrated Oversight Team for the Joint Actinide Shock Physics Experimental Research (JASPER) Facility Return to Program project was recognized for effective line oversight:

Charlotte Carter, Adam DaeGorn, John Leppert, Ronnie Alderson, Xavier Aponte, William Bosma, Kevin Breen, Jhon Carilli, Brian Clifton, Thomas Denny, Ruston Eleogram, Thomas Enyeart, Brian Fiscus, Howard Goldin, Jeffrey Haeberlin, Kathryn Knapp, Craig Maki, Edwin Martinez, John Martinez, Barry Mellor, Robert Mignard, James Mumma, William Pulse, Bruce Rose, Don Seaborg, Matthew Snyder, Bruce Stolte, William Suiter, Anthony Sy, Janet Appenzeller-Wing, Andrew Weber, John Myers and Cynthia Lockwood.

High-Explosive Pulsed Power Experiments Team

During CY 2011, the High-Explosive Pulsed Power Experiments (HEPPE) team successfully conducted three Mini-G experiments at the NNSA/NNSS for Big Explosives Experimental Facility (BEEF) in Area 4. In recognition of outstanding performance in support of the HEPPE Mini-G Test Series 4, 5, and 6:

Peter Munding, Thomas Denny, Randy Flurer, Sandra Maines, Gary Skougard, John Heck, Timothy Buer, Sheryl Pfeuffer, Frank Spenia, Bill Fritz, Michael Gibo, Corey Bishop, Kyle Stucki, Anselmo Garza, Scot Tibbits, Joshua Friedman, Martin Burk, Gregory Perryman, Edward Daykin, Carlos Perez, Jr., Michael Doman, Randy Rohde, Kenneth Konops, Chan Jung, Nathan Sipe, Raymond Eichholz, Robin Robinson, Heath Fullmer, Steven Gardner, Michael Bridenburg, John Pelles, Michael Clark, Lawrence MacNeil, Barbara Begley, Mandy Hutchins, Steven Slavin, William Skarda, Lorraine Capitanelli, Savannah Mills, Glenn Schaefer II, Steven Nolan, Stephen Coleman, Kenneth Watts, Thomas Gascoigne, Gerald Hawe and Darrin Valentine.



Don Cook, Phillip Mertz and Martin Glasser.

Source Physics Experiment Team

The Source Physics Experiment (SPE) Team was recognized for their outstanding and successful effort in supporting the SPEs conducted in Area 15, NNSA/NNSS. For excellence in the successful conduct of SPE1 and SPE2 meeting all test goals of the participating scientific community:

Edward Watkins, Laura Tomlinson, Bob Golden, Peter Munding, Thomas Denny, William Pulse, Catherine Snelson, Ping Lee, Dennis Barker, Frey (Scot) Tibbits, Robert White, Ryan Emmitt, Thomas Graves, Matthew Teel, Steven Becker, George (Chuck) Fauerbach, Steven Bobo, Dennis Chapman, Myra Fukuno, George Hand, Amanda Klingensmith, Joseph Leeming, Juan Lucero, Mark Owen, Michael Pancake, Robert Schuette, Richard Venedam, Darrin Anderson, Ian Bortins, Robert Caccavale, John Heller, Grant Hill, Martin Cavanaugh, Stephen Coleman, Rebecca Davis, John DiBenedetto, Steven Gardner, Michael Howard, Stuart Hupe, Ashley Isaacs, Mark Jaskolski, Kenneth Konops, Dexter Lee, John Morales, Sheryl Pfeuffer, Stevon Rainey, Daniel Robinson, Robin Robinson, Terrence Sonnenburg, Asa Sudderth, James Stedeford, Matthew Weaver, Al Wright, George Baca, Abad Bautista, James Chiodo, Dominic Cotroneo, Robert Cullison, Richard Ely, Ronnie Espinosa, Kirk Forest, Sr., Albert Garcia, Roy Goller Cuahutemoc Gonzalez, Barry Green, Benny Greene, Dale Headington, Clyde Hooper, Kenneth James, Steven Jones, George Juniel, II, Archie Kahele, Ross Kitchen, David Lory, John McInnis, Carl Morgan, Frank Mutz, Richard O'Mellan, Johnny O'Neal, Fredrick Ortega, Bruce Oxburrow, Peter Pagoria, Dave Pawlowski, Jeffrey Pearce, Marc Pinkes, Donald Price, Robin Riggs, John Roberts, Paul Robinson, Ted Sargent, Gary Sill, Timothy Sinclair, Daniel Sturman, Terry Troha, Robert Thomas, Mike Tuoza, Michael Wilkes, Robert Young, Marlena Murray, Margaret Townsend, James Kei, Angela Clark, Kenneth Smith, Gabriel Plank, Allyn Caster, Michael Culig, Nathan Davis, Nicolas DiBatista, Tarabay Antoun, Arthur Rodgers, Jr., William Walter, Robert Mellors, J. Patrick Lewis, Philip Harben, Norman Burkhard, Jay Zucca, Jenni de Pruneda, Wendee Brunish, Christopher Bradley, Howard Patton, David Steedman, Thomas Sandoval, Aviva Sussman, Emily Schultz-Fellenz, Douglas Byers, Ward Hawkins, Robert Abbott, Nedra Bonal, Scott Thomas Broome, Robert Corbell, Robert Huelskamp, Brett Bedeaz, William Tedeschi, Frederick Helsel, Mike Pace, Mike Petty, Kiran Shah, Kash Wittingham, Roger Bevins, David Loewer, Roland Carnero, Barbara Harris-West, Gary Reynolds, Guadalupe Rodriguez, Elizabeth Lennox, Robert Reinke, Eric Rinehart, Charlie Morse, Dennis Mulnix, Paul Ortego, Byron Ristvet, Lonnie Bamert, Hector Rodriguez, Blair Walton, Ron Hockey, David Morgan, James Jaramillo, Greg Dutro, Tom Ralston, Gary Smith, Jeff Thomsen, William Fenner, Travis Brooks, Roger Peterson, Terry Valverde, Susan Nava, Tim Bowers, Damian Kolbay, Chris Schneider, Denny Stevens, Charlie Vines, Chandan Saikia, Ray Dennis, Rick Lantrip, Paul Rogers, Kip Smith, Phillip Abbott, Walt Schalk and James Wood.

U-233 Zero Power Reactor Plate Receiving Team

Eight months after an endorsement by NNSA Deputy Secretary Daniel Poneman, an accelerated schedule was met in December 2011 by receiving the first canisters of Zero Power Reactor plates from Oak Ridge National Laboratory. In recognition for outstanding support in the accelerated Zero Power Reactor plate shipment schedule:

Rustin Long, Bob Kanning, Lori Maurer, Mario Angel, DeAnn Long, Deborah Aguero, John Wright, Mary Alice Price, Laura Harris, David Klamann, Roland Kudo, Steve Davis, Al Kjos, Rob Kluever and Dirk Schmidhofer.

Phillip Mertz

Phillip Mertz did an exceptional job of coordinating, consolidating and orchestrating the 2011 update to the Nuclear Explosive Safety Master Study for Security Operations at the NNSS.

Advanced Optical Cavity Probe Design Team

The Advanced Optical Cavity Probe Design Team's innovative design and development of many-point optical probes using custom imaging lenses change the way we monitor the movement of a curved imploding surface:

Brent Frogget, Brian Cata, Brian Cox, Douglas DeVore, David Esquibel, Daniel Frayer, Morris Kaufman, Robert Malone and Vincent Romero.

Pele Bunker Team



Don Cook, Randy Flurer and Ray Juzaitis.

The Pele Bunker Team was nominated in recognition for their superb and successful effort in supporting the Pele Project at the Big Explosives Experimental Facility (BEEF) in Area 4 at the NNSA/NNSS:

Randy Flurer, Bill Fritz, Michael Gibo, Corey Bishop, Kyle Stucki, Scot Tibbits, Jared Gordon, Martin Burk, Michael Doman, Kenneth Konops, Chan Jung, Steven Gardner, Michael Bridenburg, Stephen Coleman, Frank Spenia and Ryan Emmitt.

Multiplexed Photonic Doppler Velocimetry Development (MPDV) Team



Don Cook, Edward Daykin and Ray Juzaitis.

This team developed and tested a first-of-a-kind Multiplexed Photonic Doppler Velocimetry (MPDV) system as the primary diagnostic for capturing hydrodynamic data on the Gemini series of Subcritical Experiments at actual weapon scale. MPDV provides immediate programmatic payoff through increased data recording capacity and significant reduction in experiment costs:

Edward Daykin, Cenobio Gallegos, Tanya Atencio, Martin Burk, Lorraine Capitanelli, Brian Cata, Abel Diaz, Ryan Emmitt, Elipio Garcia, Anselmo Garza, Michael Gibo, Mandy Hutchins, Adam Iverson, Crystal Maestas, Kevin McGillivray, Michael Pena, Carlos Perez, Araceli Rutkowski, Matt Teel and Karen Theuer.

Armagosa Valley Residents Get Closer Look at NNSS Groundwater Efforts

By Marc Klein, Navarro-Intera

From drilling to sampling, groundwater was the topic on everyone's minds at a recent open house in Amargosa Valley, Nev.

On Sept. 18, residents of Beatty, Amargosa Valley, Pahrump and other neighboring communities gathered for the 4th Annual Groundwater Open House to learn about the extensive work being done to address groundwater contamination from historic underground nuclear tests at the Nevada National Security Site (NNSS).



Armagosa Valley residents get a look at a water sampling display during the Open House.

This year's Open House featured a new format consisting of interactive stations set up throughout the Amargosa Community Center. The stations were organized into six categories: Monitoring, Drilling, Sampling, Modeling, Protection and Communication. Stations consisted of posters, displays, handouts and videos as well as demonstrations conducted by subject matter experts.

Drilling was one of the more popular stations with a hands-on interactive model of an "ant-sized" hydrologic system that demonstrated how groundwater, and any contamination introduced into it, moves beneath the surface.

Attendees also gravitated to the Modeling station which featured three-dimensional video graphics that animate how contaminants behave in groundwater that moves in the complex geologic subsurface of the NNSS.

"There was a lot of interest shown in the computer modeling technology we use in our groundwater drilling strategy," said Nevada Site Office (NSO) Federal Activity Lead Bill Wilborn. "Modeling is a critical part of the process as it is an important tool in helping us forecast potential contaminant flow paths."

Recent groundwater drilling activities at the NNSS were also highlighted with scientists fresh from the field discussing two model evaluation wells drilled in Frenchman Flat during August, as well as two groundwater characterization wells under construction in Pahute Mesa.

In addition to NSO Federal and contractor staff, other Open House participants included Nye County, the State of Nevada Divisions of Environmental Protection and Water Resources, U.S Geological Survey, Desert Research Institute, and Nevada Site Specific Advisory Board members.



NNSS Helps Schools with Operation Clean Desert

By Dona Merritt, Navarro-Intera

The Nevada National Security Site (NNSS) helped kick off the 2012-2013 school year in August with another chapter of Operation Clean Desert.

This year, the Operation Clean Desert Teacher's Guide made its debut along with the recently revised companion activity book during the 2012 Educator Appreciation Day & Back To School Fair at The Mirage Resort and Casino in Las Vegas.

Hundreds of teachers attended the event (hosted by MGM Resorts International) and approximately 150 teachers made their way to the Operation Clean Desert display. "This was a great opportunity to promote Operation Clean Desert and demonstrate how these materials can be incorporated directly into their classrooms," said Navarro-Intera Public Involvement Manager Dona Merritt. "I've already had one 8th grade

science teacher follow-up with a request for 560 copies of the activity book and two more teacher guides."

Operation Clean Desert posters showcasing the groundwater characterization program at the NNSS were a main draw at the Nevada Site Office Environmental Management station. Teachers, exhibitors, and Mirage Dolphin Habitat staff responded with interest to the colorful and education-oriented graphics, according to Merritt. "One teacher even requested the posters for his classroom."

While the event was a boon for getting the word out to educators on Operation Clean Desert, teachers were the real winners. In addition to the thousands of donated school supplies, approximately 20 organizations exhibited with offers of field trips, classroom speakers, and learning materials.

What is Operation Clean Desert?!

Operation Clean Desert follows the adventures of Dr. Proton and Adam the Atom as they visit the Nevada National Security Site and teach students how various environmental challenges are being tackled.

Available free learning materials include several versions of the activity book geared to different educational levels, a teacher's guide and student worksheet companion for Volume 1 Number 4 of the activity book targeting 6th to 9th grade students, an on-line computer game (www.nv.energy.gov/outreach/kidszone/game.aspx#), and various displays.

These learning materials are an excellent resource for educators, parents, after-school programs, community groups, libraries, and more!

For more information or to request materials, email envmgt@nv.doe.gov or call (702) 295-3521.

NSTec Researchers Receive National Award

By Dante Pistone, NSTec

Researchers from National Security Technologies (NSTec) will receive a 2012 R&D 100 Award from *R&D Magazine*, recognizing their technological innovation. The R&D Awards honor the nation's 100 most significant technological products introduced in the past year.

An NSTec team led by scientist Ed Daykin, in collaboration with researchers Ted Strand from Lawrence Livermore National Laboratory (LLNL), and David Holtkamp from Los Alamos National Laboratory (LANL), developed the Multiplexed Photonic Doppler Velocimeter (MPDV), a portable optical velocimetry system that simultaneously measures up to 32 discrete surface velocities onto a single digitizer by multiplexing signals in frequency and time. The device uses Doppler light reflections to measure shock physics properties, which can be used to conduct everything from modeling weapons characteristics to the vibrational analysis of auto and aircraft systems.

"This award is a tribute to our NSTec team and our Livermore and Los Alamos partners who worked tirelessly to develop this cutting-edge technology," said Raymond J. Juzaitis, NSTec president. "It again demonstrates how the work of NSTec scientists and engineers translates into real-life applications that will benefit our nation's security and scientific advancement."

As recently as one year ago, scientists measuring shock wave surface velocities typically collected only four channels of velocimetry data, and used extrapolation, assumptions and models to determine what was occurring in regions of experiments that were not observed directly. Thanks to advances in probes, digitizers and

technology in telecommunications, the collaborating team recently fielded two high-value experiments of 96 channels and 28 channels, respectively, of data for a fraction of the original cost, using MPDV.

MPDV has been used at LLNL, LANL and the Nevada National Security Site to gather velocimetry data on key national security work at unprecedented density and comprehensiveness. "The amount of information now available to researchers in the field of extreme states of matter using MPDV is like comparing telegraph communication to the modern high-speed internet," said Howard Bender, Site Directed Research and Development manager for NSTec. "Furthermore, the technology is a giant leap forward in ensuring we maintain our nation's nuclear deterrent without resumption of underground testing."

Awarded annually by *R&D Magazine* to the best technological advances at universities, private

corporations, and government labs around the world, the R&D 100 Awards are recognized as the "Oscars of Innovation." First awarded in 1963 as the I-R 100s, many have become household names, helping shape everyday life for many Americans.

"The men and women working throughout the nuclear security enterprise are at the leading edge of science and technology," said National Nuclear Security Administration (NNSA) Administrator Thomas D'Agostino. "This year's R&D 100 award winners are receiving well-deserved recognition for their work to implement the president's nuclear security agenda, enhance our national security and overcome some of our greatest challenges. For that I extend them my most sincere congratulations and thanks."

The R&D awards will be presented Nov. 1 during a black-tie dinner at the SeaWorld Conference Center in Orlando, Fla.



The MPDV Team (left-to-right): Ed Daykin, David Holtkamp, Howard Bender, David Esquibel, Oliver "Ted" Strand, Araceli Rutkowski, Cenobio Gallegos, and Carlos Perez.

SDRD Annual Report Highlights R&D Achievements

By Howard Bender, NSTec

A 10th anniversary edition annual report of the Site-Directed Research and Development (SDRD) program released recently recognizes a decade of innovative research and development (R&D) accomplishments that support the Nevada National Security Site (NNS) and national security.

The annual report, covering fiscal year 2011, highlights how the R&D program of National Security Technologies (NSTec) has contributed significantly to shaping emerging missions that continue to evolve. R&D initiatives in stockpile stewardship science, nonproliferation, emergency response, and treaty verification and monitoring have garnered substantial success in the last decade.

Some of the more important accomplishments are highlighted in this year's report:

Optical velocimetry measures moving surfaces and directly characterizes important shock conditions in materials. In 2010, SDRD breakthroughs in Multiplexed Photonic Doppler Velocimeter (MPDV) created a new paradigm, allowing experiments to be instrumented with hundreds of velocimetry channels with long-time records and yielding an unparalleled amount of obtained information. Key to extracting the full capability of MPDV rests on yet another SDRD-based innovation is the compact

fiber-optic probe. These key technologies came together at precisely the right time to provide unprecedented capability and enable a new class of subcritical experiments to be conducted in 2012-2014. Also, MPDV was just named an R&D 100 award winner in June (see article above.)

Improved understanding of the **equations of state (EOS)** of metals under shock conditions is critical to advanced modeling. (To understand an EOS, it is important to measure the temperature of the shocked metal, yet obtain highly accurate measurements.) This process has been extremely difficult. SDRD has funded the development of new diagnostics to determine the temperature of a shocked metal sample from its thermal radiation. This work has developed methods for using pyrometry to measure the thermal optical emission and small integrating spheres to determine the emissivity of a shock sample. This research has been published in two recent articles in the *Journal of Applied Physics*.

The 9.0 earthquake that struck off the coast of Japan triggered a massive tsunami, heavily damaging the Fukushima Daiichi nuclear power plant. In time, radioactive materials discharged into the landscape and atmosphere. Cooperating with Japanese authorities, the NNS radiological emergency response teams conducted aerial

measuring system (AMS) flights over the areas impacted by release of radioactive materials. Radiological simulation capabilities used in the absence of live contamination, developed under a previous SDRD project, have since become integral training tools for the AMS mission and provide a high degree of readiness.

Another SDRD project developed a generation of devices called the **Multi-Path Communication Device**, or MPCD. The MPCD transmits data in real time using one of several communication pathways, such as cellular, satellite and many others. The MPCD technology was embedded in the Search Management Center used in the DOE response in Japan.

Other more recent SDRD projects (FY 2009-2010) sharpened operational expertise and enabled better theoretical understanding and interpretation of the AMS radiological data products.

The above examples highlight just some of the contributions SDRD has made over the past decade. The SDRD program continues to provide the only true unfettered mechanism for original innovation and development that returns multifold to the NNS and the U.S. government.

Favorite Fotos

These employees captured a variety of vehicles around the world.

Have some great shots you want to share? Email your JPGs to Lory Jones at jonesla@nv.doe.gov. Include your name, facility and a photo caption.



Gene Capelle, Special Technologies Laboratory – School bus in Myanmar.



Gary Maples, Nevada National Security Site (NNSS) – Pick-up truck, Berlin, Nev.



Stuart Rawlinson, NNSS – C130 Hercules at the South Pole Dome, Antarctica.



Rose Paloma, North Las Vegas Facility – Christmas package bus, Rothenburg ob der Tauber, Germany.

Navarro Donates to Local Charities

By Angela Ramsey, Navarro-Intera

In keeping with its tradition of giving back to the local community, Navarro-Intera (N-I) donated \$1,000 to local Las Vegas charities in the month of August.

N-I donated \$500 to the Nevada Partnership for Homeless Youth (NPHY) in the forms of a check for \$250 and \$250 in gift cards good for food and clothing. Additionally, N-I donated miscellaneous hygiene products that are collected by N-I employees on a continuous basis throughout the year. The NPHY mission is to eliminate homelessness among Nevada's youth. They are the only adolescent youth service provider in Nevada with a continuum of care extending from street outreach and 24-hour crisis intervention services, to a full-time drop-in center and an independent living program.

Candlelighters Childhood Cancer Foundation of Nevada (CCCFN) also benefited from N-I's generosity and commitment through a donation of \$500 to help support the annual 5K & One Mile "Race for our Kids."

CCCFN is a non-profit agency that provides support and services for families of children diagnosed with cancer. Children from birth to 21 years of age who have been diagnosed with cancer or who have survived cancer are eligible for services if they are living or being treated in Nevada.

For more information on NPHY, visit: www.nevadahomelessyouth.org. You can find more information about Candlelighters Childhood Cancer Foundation of Nevada at: www.candlelightersnv.org.



Helen Stolz of Navarro-Intera presents Bob Bellis, NPHY Operations manager, with a \$250 check.



EMPLOYEES IN THE SPOTLIGHT

Elaine Hawkins



Current Position

As senior operations specialist for the Remote Sensing Laboratory, Radiological Emergency Response (RER) Department, Elaine is responsible for projects conducted under the Work for Others (WFO) program within RER. She is also a liaison and support manager on the

Consequence Management Response team. Elaine's role on WFO has led to successful acquisitions of several projects from various organizations, such as the City of New York, State of Washington, the National Aeronautics and Space Administration, the Department of Energy (DOE) and other federal agencies.

Education

Studying Business Marketing, University of Phoenix

Elaine, you've been serving the Site mission for, remarkably, 35 years. Why have you stayed so long?

"I have been fortunate to continue to work at the Site because there is still interesting work to do, and goals, objectives and challenges I need to meet."

What has been your most significant contribution to your job?

"There are at least two. One was being among the small group of folks when the Federal Radiological Monitoring and Assessment Center (FRMAC) was formed by the DOE and the Nuclear Regulatory Commission. The other was attaining my first Work for Others project where I saw the significance and value of work happily performed by my fellow co-workers for the customer."

What do people NOT know about you (special talent, hobby, desire, etc.)?

"I have a huge bucket list of desires – among them is to write and publish a story, and organize and clean out my closet!"

What book(s) is on your nightstand?

The Holy Bible and Ric Edelman's "Rescue Your Money"

Favorite TV show or movie?

Tyler Perry's "Madea" movies

Favorite motivational saying?

"The tragedy of life doesn't lie in not reaching your goal. The tragedy lies in having no goals to reach." – Dr. Benjamin E. Mays

What or who inspires you, and why?

"The person who inspires me is someone who willingly gives his or her life for another. This is an unselfish act of love."

Susan Krenzien



Current Position

As a Quality Assurance specialist for Navarro-Interra, Susan conducts assessments and technical editing and consistency review of documents.

Notables (awards, honors, achievements, published works, etc.)

Doer of Deeds, 1994 (Yucca Mountain)

Education

B.S., Forensic Science, California State University, Sacramento

Susan, you've been serving the Site mission for, remarkably, 23 years. Why have you stayed so long?

"It's fun and interesting and I love Nevada."

What has been your most significant contribution to your job?

"The attention to detail I bring to any project."

What do people NOT know about you (special talent, hobby, desire, etc.)?

"I knit and I tat (lace making)."

What book is on your nightstand?

"Let's Pretend This Never Happened..." By Jenny Lawson

Favorite TV show or movie?

"The Assassination Bureau Limited" (movie)

Favorite motivational saying?

"Become the most positive and enthusiastic person you know."

What or who inspires you, and why?

"My parents. They were always there and they worked hard. We always knew they were there, and they instilled my work ethic."

NNSS Calendar of Events

October 1
National Energy
Action Month

October 17
Multicultural NvE
Cook-Off

October 16
UBS Blood Drive
Mercury Cafeteria,
10 a.m. – 2 p.m.

October 20
NSTec Picnic
Centennial Hills Park,
11 a.m. – 4 p.m.



RSL Coordinates Aerial Survey of Bay Area

By Karen McCall, NSTec

The Aerial Measuring Systems (AMS) helicopter from the Remote Sensing Laboratory (RSL) in Las Vegas spent part of August conducting aerial radiation flyovers in the California Bay Area. The helicopter spent more than a week flying at a low altitude over portions of San Francisco, Pacifica and Oakland, Calif. The helicopter took measurements of naturally occurring background radiation.

The flyovers were a part of a joint research project between the Department of Homeland Security's Domestic Nuclear Detection Office (DNDO) and the National Nuclear Security Administration (NNSA) to assess natural background radiation levels. The survey covered approximately 69 square miles over the selected locations.

The California Bay Area was chosen because of the variations in topography and buildings that provide different background radiological environments. In the survey area, they were able to obtain radiation measurements from urban

and suburban regions, canyons, hills, harbors and shorelines.

The helicopter was the talk of town due its low altitude and specialized equipment. The local bay area news was very instrumental in informing the public of the planned mission.

Link to news article: <http://www.ktvu.com/news/news/low-altitudes-radiation-detection-flights-underway/nRLKS/>.

According to Dr. Russell Malchow, AMS mission manager, "Aerial surveys like this are important to help determine what should be present so that we can better recognize and understand abnormal radiological signals that need further investigation in the midst of an emergency."

The NNSA's twin-engine Bell 412 helicopter, operated by RSL's Aerial Measuring System team at Nellis Air Force Base, performed the survey. Limited to daylight hours, the helicopter flew a grid pattern over the locations at about 300 feet above the ground. The helicopter made daily flights between Aug. 27 and Sept. 1. The background data will be used by DNDO and NNSA to improve aerial radiation measurement capabilities used by local, state, and Federal entities.

The AMS operation was similar to missions that have been conducted around the United States and abroad for the past 50 years. The specialized team conducting the flights was also a part of the NNSA aerial response team which has flown missions in Japan after the Fukushima incident; conducted background surveys in Seattle, WA. and Baltimore, MD; and responded to a lost source in Texas.



RSL's helicopter conducted aerial surveys over the California Bay Area in August.

NNSS Becomes Site of Desert Tortoise Project

By ONEVOICE Staff Reporters

An important step was taken recently directed toward protecting desert tortoises at the Nevada National Security Site (NNSS).

Sixty juvenile desert tortoises were released in an undisturbed area on the southern end of the Site. The animals came from the Desert Tortoise Conservation Center (DTCC) in Las Vegas. The DTCC is managed by the San Diego Zoo for conservation research for the United States Fish and Wildlife Service (USFWS).

The desert tortoises are fitted with special radio tracking devices so their movements can be studied. Among benefits of the study:

- Identify habitat features that desert tortoises prefer
- Determine the "home range," habitat use patterns, burrow use patterns and movement patterns of desert tortoises
- Correlation of weather, vegetation and soil data with tortoise activity and movement patterns
- Use of foraging and drinking sites
- Causes of tortoise injuries and mortality
- Assess the health and condition of desert tortoises at the Site.

Under the Endangered Species Act, the USFWS lists the desert tortoise as "threatened." This project is a joint effort of the NNSA/NSO (Nevada National Security Site), San Diego Zoo, USFWS, and the U.S. Geological Survey (USGS) Biological Survey.



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