Nevada National Security Site

ONE VOICE

August 2015

A Publication for the
Nevada Enterprise (NvE) Complex

SDRD Annual Report

FY14 research and development projects get top billing.

See page 3.

NNSA Honors NvE Employees

Aviation, safety, security, long-term tenure are among the awards.

See page 4.

SPE-4 Prime

Experiment to detect low-yield nuclear explosions was a collaborative effort.

See page 6.

NNSA's Klotz, Creedon Visit NvE Facilities

By Lory Jones, *OneVoice* Editor, and Darwin Morgan, Nevada Field Office

National Nuclear Security Administration (NNSA) Administrator Frank Klotz and Deputy Administrator Madelyn Creedon visited the Nevada Enterprise (NvE) July 13-15. Klotz came to update employees on his impressions and the status of our mission for the Department of Energy (DOE) and the United States and its allies, as well as learn about some of our latest accomplishments at the Nevada National Security Site (NNSS). They also visited the National Atomic Testing Museum.

They began their visit at the NNSS, focusing on two major mission areas: the Non-Proliferation Test and Evaluation Complex (NPTEC) and the Radioactive Waste Management Complex (RWMC). At NPTEC, Klotz and Creedon were briefed on NPTEC's national security work, gaining a clearer understanding of how it supports not only NNSA national security mission but also other federal agencies that use the Site's facilities.

Their second stop focused on Environmental Management's RWMC, which supports disposing of about five percent of generated low-level waste from around the DOE complex.

Klotz also took time at the North Las Vegas Facility for a discussion before a live and teleconferenced audience. There, he presented various NvE awards to outstanding employees from National Security Technologies, the Nevada Field Office and Centerra-Nevada (see Awards on p. 4).

Klotz updated employees on the robust health of our stewardship of stockpiled nuclear weapons, and praised our work on counterterrorism and global nonproliferation of radiological/nuclear weapons and our emergency response training. He also mentioned that the NNSA lent its expertise on the landmark Iran nuclear program negotiations and influenced policymakers' decisions, as well as NNSA's involvement in NASA's New Horizons spacecraft hovering over Pluto. (The DOE has provided radioisotope thermoelectric generators, or RTGs, to generate spacecraft power for many years. RTGs, called "space batteries" or "nuclear batteries," are among the DOE's research and development accomplishments that have enabled American scientists to explore the solar system through Apollo missions to the moon, the Viking missions to Mars and other missions to the outer solar system.) Klotz concluded with discussing a framework for the NNSA mission and priorities for the near-term.

For more information about the NNSA, visit its website: www.nnsa.doe.gov. You can also follow Klotz on Twitter: @FrankKlotzNNSA.

Photo: Darwin Morgan

Left to right: NNSA Administrator Frank Klotz visits the Nevada National Security Site's Radioactive Waste Management Complex, with Nevada Field Office (NFO) Manager Steve Lawrence, Deputy Administrator Madelyn Creedon and NFO Environmental Management Operations Manager Rob Boechlecke.

NSTec Personnel Receive SAVY-4000 Training

By *OneVoice* Staff Reports

In an effort to support National Security Technologies (NSTec)'s Nuclear Materials Management initiative to become a Department of Energy M 441 compliant site in storing nuclear material, NSTec's Nuclear Operations' Training department hosted SAVY-4000. Conducted by the Los Alamos National Laboratory (LANL) Design Authority personnel, the SAVY-4000 training is designed for worker protection during the handling and storage of nuclear/radioactive material. Fissionable material handlers and source custodians learned how to package material in a safe and compliant manner.

In addition, LANL personnel provided a Train the Trainer session for Mario Angel, an NSTec Certified Packaging Center principle training specialist who will train additional employees at the Nevada National Security Site (NNSS).

This collaborative initiative will benefit not only NSTec's facilities as a SAVY-4000 user, but also other user organizations such as LANL and Lawrence Livermore National Laboratory working at the NNSS.

Photo: Mario Angel

During SAVY-4000 training, NSTec employees perform a practical exercise while Los Alamos National Laboratory engineer/instructors observe.

NvE Executive's Corner

By now, most of you know that the Nevada Enterprise is on its way to proudly celebrate the 65th anniversary of the Nevada National Security Site (NNSS).

This noteworthy milestone deserves to be lauded – not just for ourselves and the work we do, but for the United States overall and our allies. Without the NNSS and its decades of thousands of workers who loved their country, as well as critical scientific and technological breakthroughs in nuclear and radiological science, the safety of our country would not be as assured as it is today.

It's fascinating to imagine how our present compares with our historic beginnings. So much has changed, yet remained the same. The drive to support and strengthen national security was strong decades ago, and it is still.

What has evolved since its earliest beginning?

The NNSS's historic mission began when President Harry Truman, on Dec. 18, 1950, authorized establishing a 680-square-mile section of the Nellis Air Force Gunnery and Bombing Range as the Nevada Proving Grounds. Our government did this as a response to an emerging Cold War with the Soviet Union. Our mission was clear: To conduct testing and uphold a national nuclear deterrent to keep our nation safe.

One month later came the first atmospheric nuclear test: "Able," Jan. 27, 1951. One hundred atmospheric tests followed, up to Aug. 5, 1963, when the Limited Test Ban treaty was signed in Moscow, banning all atmospheric testing.

Our country was also interested in peaceful uses of nuclear energy. From 1962 to 1971, 26 tests involving 29 detonations were conducted as part of the Atomic Energy Commission's "Plowshare" Program ("plowshare" from the Old Testament's book of Isaiah, "... when men shall beat their swords into plowshares"). The Plowshare Program was a research and development activity directed toward using nuclear explosives in industry and science – not just in war. The program was based on the premise that the tremendous energy emitted from nuclear explosions could be used for a variety of peaceful purposes, including earth excavation, as well as ditching and channeling, recovering valuable mineral resources, and stimulating production of natural gas and other hydrocarbons.

In all, 928 nuclear tests – 804 underground, 100 atmospheric and 24 additional tests through joint partnerships with the United Kingdom – were conducted to study weapons effects, nuclear weapons safety and reliability, and the peaceful use of atomic energy.

The legacy of nuclear testing also ushered in a need for environmental responsibility, and in 1989 a nationwide environmental management program was formally established. At the NNSS, environmental activities have been in full swing for decades to include onsite characterization and cleanup activities and radioactive waste disposal facilities that are an invaluable resource for our nation's Cold War facilities.

When President George H.W. Bush signed a moratorium on underground testing in 1992, the nuclear scientific community asked, "What now?" Enter the era of subcritical experiments – that is, experiments in which no critical mass is formed, therefore never generating self-sustaining nuclear chain reaction. Through advanced technology, we have been able to maintain the safety and reliability of the U.S. nuclear stockpile without full-scale nuclear explosive testing. With these advancements came the establishments of the Device Assembly Facility, the Big Explosives Experimental Facility, the Hazardous Materials Spill Center, the Joint Actinide Shock Physics Experimental Research Facility, the Radioactive Waste Management site – and of course, stewardship of our nation's former nuclear stockpile.

From now through next year, the NvE will celebrate the Site's heritage through various activities for employees and their families to enjoy, including an open house at the NNSS.

For now, let's appreciate where we have come, and what we continue to accomplish still for this great nation.

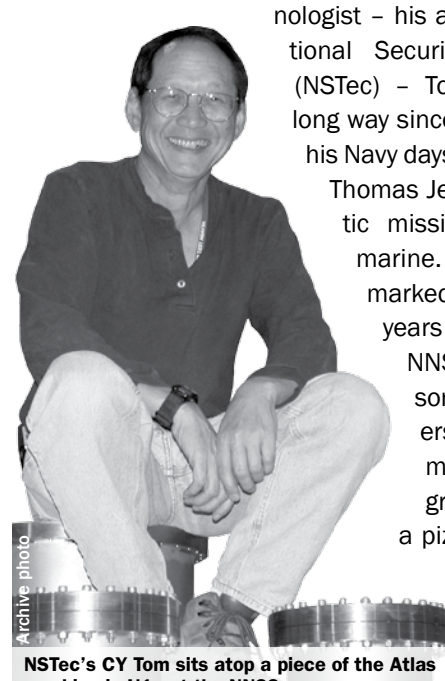
Steven Lawrence, Manager, National Nuclear Security Administration Nevada Field Office
Dan Bozman, Remote Site Manager, Sandia National Laboratories
Martin Glasser, Senior Vice President and General Manager, Centerra-Nevada
Richard Higgs, Manager, Joint Laboratory Office – Nevada/Lawrence Livermore National Laboratory
Raymond Juzaitis, President, National Security Technologies, LLC
Dave Taylor, General Manager, Navarro Research and Engineering

CY Tom Jr. Celebrates 50 Years at the Site

By *OneVoice* Staff Reports

You know you're a respected legend at the Nevada National Security Site (NNSS) when you're often introduced to wide-eyed visitors during tours.

That's how it is with CY Tom Jr. Now a master technologist – his actual title at National Security Technologies (NSTec) – Tom has come a long way since the 1960s and his Navy days aboard the USS Thomas Jefferson, a ballistic missile nuclear submarine. Recently, Tom marked 50 remarkable years of service at the NNSS. His supervisors and coworkers celebrated his milestone underground at U1a with a pizza and cupcake luncheon.


Archive photo
NSTec's CY Tom sits atop a piece of the Atlas machine in U1a at the NNSS.

Even though he doesn't like attracting attention, Tom is the subject matter expert employees go to for essential support on subcritical experiments and their instruments, and no wonder: He said he has been around for about 635 underground nuclear shots at the NNSS.

"CY is the one person with the knowledge and ability to get control systems and diagnostic systems set up and operating at optimum performance. He keeps the boat afloat," said Supervisor Gene Hunt.

After leaving the Navy, Tom began his first stint at the NNSS with EG&G as an Alpha technician and supervisor of the Los Alamos National Laboratory (LANL) underground nuclear experiments. This led to becoming the technical supervisor of the LANL analysis group using state-of-the-art computer systems consisting of VAX computers with FORTRAN-based programs.

At the end of underground nuclear testing, Tom began supporting LANL in training and supervising personnel for the Pegasus experiments. This was followed by supporting subcritical experiments, the ATLAS project in Los Alamos and the commissioning of ATLAS at the NNSS, as well as commissioning the DARHT II beam line.

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Steve Lawrence, Manager, NNSA Nevada Field Office • Darwin Morgan, Director, Office of Public Affairs

Editor: Lory Jones. Submit articles or ideas to: onevoice@nv.doe.gov

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Contributor: Mario Angel

NEVADA PRESS ASSOCIATION

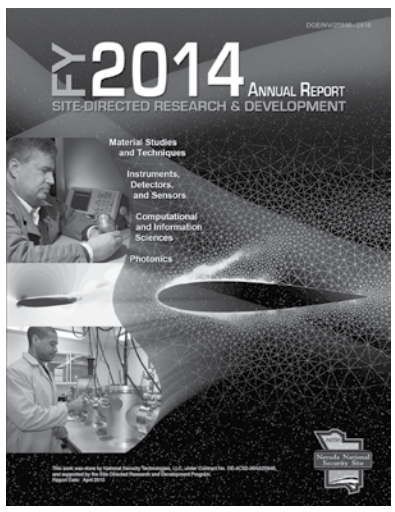
U.S. Department of Energy
National Nuclear Security Administration Nevada Field Office
P.O. Box 98518, Las Vegas, NV 89193-8518
Phone: (702) 295-3521

NNSA National Nuclear Security Administration

SDRD Annual Report Highlights the Stars of R&D

By Michele Vochosky, NSTec

The FY 2014 Annual Report on Site Directed Research & Development (SDRD) is out. Published in May, it features project summaries of 25 research and development (R&D) projects from October 2013 through September 2014.



The projects, funded at an average of $240,000 in fiscal year 2014, were awarded to National Security Technologies (NSTec)'s principal investigators whose proposals addressed technology gaps and advanced strategic goals, and investigated emerging technologies as varied as gamma-ray imaging, dynamic material properties and machine-to-machine architectures for emergency responders.

The 280-page report comprises sections on materials studies and techniques; instruments, detectors and sensors; computational and information sciences; and photonics. A few of the reports are highlighted below.

"This year's SDRD projects were some of our most technologically advanced and challenging in the 13 years of the program. We are really breaking through barriers and getting the leverage we need to meet future mission goals," said Howard Bender, SDRD program manager.

Bender said that an excellent example of this is the work on the Dense Plasma Focus (DPF) modeling by Senior Scientist Tim Meehan and Principal Scientist Nikki Bennett, with our partners at the laboratories and Imperial College (London). The work was accomplished through collaboration with NSTec, Lawrence Livermore National Laboratory, Sandia National Laboratories and Imperial College. The report describes the hybrid data analysis approach used to simulate DPF dynamics. The new method is an improvement on previous efforts, where models did not agree with actual DPF performance. Going through several iterations to reach the new hybrid particle-in-cell/magneto-hydrodynamic software, the team is closer to more accurately model the kinetics and deal with computational meshing.

"With a little more refinement, we will achieve a much coveted predictive capability to simulate and analyze DPF performance for important mission needs," said Bender.

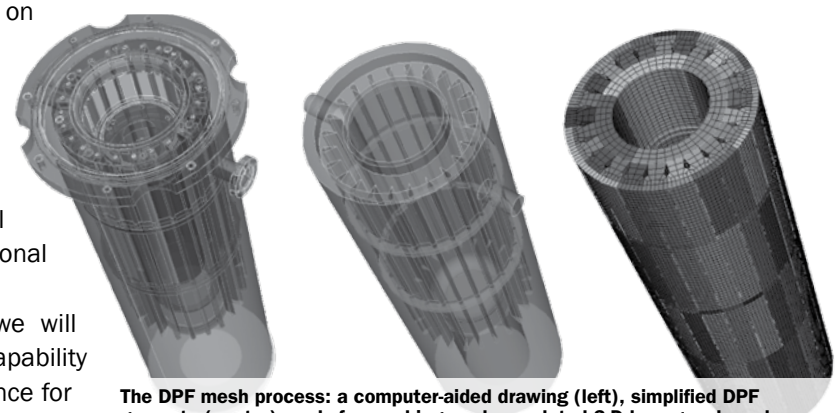
Other reports cover detectors and sensor development, such as three described here.

A team led by Senior Principal Scientist Paul Guss is in its second year of R&D to study how elpasolite crystals might be used to simultaneously detect gamma and neutron sources. This work will be useful in nuclear counter-proliferation, verification and environmental and waste management applications. Another investigator, Senior Scientist Wendy Chernesky, reports her progress developing environmentally benign, stable fluorescent technetium compounds that can be used as radiological sources for training exercises at the NNSS. Principal Scientist Al Meidinger hopes to evaluate whether ionospheric disturbances provide a suitable technique for identifying concealed nuclear detonations. This work has also led to a new possibility for early detection of major earthquakes.

The effort to measure elusive temperatures in shock wave experiments, specifically for equation-of-state development, was explored by Manager Gerald Stevens. His report, one of five in the materials section, describes how his team studied the properties of fluorescent rare earth-doped phosphors as stand-ins for other materials, since the phosphors have similar features, such as line width, wavelengths, intensities and lifetimes. They demonstrated their phosphor-based temperature measurements on challenging diamond anvil cell tests and also using high-explosive shock loading. Results not only proved the technique's viability but that it may compare favorably to other methods like Raman spectroscopy (previously explored in SDRD).

In the area of photonics, Principal Scientist Kirk Miller is developing robust, fieldable electo-optical data links that are sensitive to small analog voltage inputs. Successful R&D in this area would facilitate use of low-cost, lightweight fiber-optic cable systems for long-distance data transmission for diagnostics operating in noisy environments, such as the Joint Actinide Shock Physics Experimental Research facility, the National Ignition Facility and the Sandia National Laboratories Z machine.

"I consider this annual report one of the best ever, and every article is worth your time to read and learn what these talented staffers have accomplished," said Chris Deeney, NSTec vice president for Program Integration. "The quality of the NSTec SDRD program, as highlighted in this great 2014 year report, is gaining recognition. We are more actively engaged by the laboratories and National Nuclear Security Administration headquarters. This is a testament to the SDRD team."



The DPF mesh process: a computer-aided drawing (left), simplified DPF geometry(center) ready for meshing, and completed 3-D hexagonal mesh (right). DPF mesh models are part of DPF geometry design. Better designs increase neutron yield, and our improved simulation techniques create more accurate mesh models.

The SDRD Program is the primary source for new discovery and innovation in support of national security needs. It will host the FY 2015 annual project review Sept. 17 at the Nevada Support Facility in North Las Vegas, Nev.

Calling All NvE Veterans!

By *OneVoice* Staff Reports

Do you recognize these proud veterans? They served our country in the United States military and continue to serve the nation through the Nevada Enterprise.

See who they are on p. 7

ATTENTION VETERANS: Video Services is looking for employees who have served in the military. It's part of a special video project to recognize our veterans this November for Veterans Day. If you've served in the military, dig up an old photo of you in uniform and contact Video Services at (702) 295-5071 or email them at: videoservices@nv.doe.gov.

NNSA Honors NvE Employees with Distinct Awards

By *OneVoice* Staff Reports

Aviation Awards

The Department of Energy (DOE) Office of Aviation Management (OAM) recognized Les Winfield, Charles Lightfoot and Tim Rourke with aviation management awards for performance.

Rick Fischer of RSL-Andrews (left) accepts the GSA Award on Tim Rourke's behalf. Winfield is on the right. Between them is Jay Tilden, DOE deputy associate administrator for Counterterrorism and Counter-proliferation.

Winfield, the Nevada Field Office (NFO) Federal Aviation manager, received the 2014 DOE Federal Aviation Management Professional Award for outstanding management and oversight of National Security Technologies (NSTec)'s aircraft operations at the Remote Sensing Laboratory (RSL) at Nellis Air Force Base in Las Vegas, Nev., and Joint Base Andrews, Md. Winfield initiated a process to implement an aviation-focused Safety Management System program by completing Stage I certification of the International Standard for Business Aircraft Operations (IS-BAO). He then prepared and submitted the NFO team for IS-BAO Stage II certification, which they achieved with a performance cited for "clear evidence of buy-in to a proactive safety environment, and an overall outstanding flight department, will all pieces in place to pursue Stage III certification."

Charles Lightfoot, an Aviation site-supervisor and pilot at RSL-Andrews, received the 2014 John Cooley Aviation Operations/Support Professional Memorial Award. Lightfoot was commended for consistently demonstrating superior professionalism in Operational Support to this NFO program, and he was the catalyst and conduit for promoting professional excellence through successful team dynamics. Lightfoot's approach to each mission requirement started with a collaborative effort between contractor and federal management oversight. This approach produced the most effective plans that considered requirements from both aviation and scientific perspectives that ensured mission success.

Left to right: NFO Manager Steve Lawrence, Craig Maki, Lee Schmardebeck (back row), Milton Morton, Carl Fleming, Jason Flatt, Walter Foster (back row), Frank Klotz, Mark Jackson (back row), Centerra-Nevada Senior Vice President and General Manager Martin Glasser and NSTec President Ray Juzaitis. Not in photo: Renee Thomas and Ron Alderson.

Tim Rourke, chief of Aviation Safety, RSL-Andrews, received the 2014 DOE Aviation Safety Professional Award. Rourke's systematic approach to safety and risk management in the RSL Aviation section at Nellis and Andrews, for ground and flight safety, provides objective assessments of the operational risks and recommendations for the necessary mitigations to reduce them to their lowest practical level. Rourke's single largest improvement to the RSL Aviation Safety culture was through developing a way to identify, document and track any issue, short-coming or suggested improvement to the organization.

Winfield and Rourke also won, in their respective categories, the 2014 GSA (General Services Administration) Federal Aviation Awards.

NNSA Administrator Frank Klotz (right) chats with Centerra-Nevada's Security Officers Milton Morton, Mark Jackson and Walter Foster (l-r) after Klotz's all-hands meeting July 15.

Winfield received the 2014 Federal Aviation Professional Award in the Managerial Official category. This award is presented annually to the best federal employee in a managerial position whose primary duties involve management of a non-Department of Defense (DoD) federal flight program. Rourke received the 2014 Federal Aviation Professional Award in the Safety Official category. This award is presented annually to the best federal or contractor employee in an aviation safety position whose primary duties support a non-DoD federal flight program.

NNSA All Hands Meeting

On July 15, NNSA Administrator Frank Klotz presented various Nevada Enterprise awards to these outstanding employees.

Nevada Field Office (NFO)

Renee Thomas, 30 Year Service Award: "For your dedication and excellent support to the missions of DOE, NNSA and the Nevada Field Office."

Ron Alderson, Safety System Oversight Representative of the Year: "For your outstanding oversight of our critical safety systems at the NNSS. Your dedication, leadership and expertise are greatly appreciated."

Craig Maki, Security Professional of the Year: "For your dedication to ensuring the security of our facilities and nuclear materials at the NNSS. Your leadership, expertise and determination are greatly appreciated."

National Security Technologies: Performance Awards

Jason Flatt and Carl Fleming (more about their and others' Performance Awards will appear in the September issue of *OneVoice*).

Centerra-Nevada: 30+ Years of Service

- Lee Schmardebeck, 35 Years, Security Police Officer
- Walter Foster, 30 Years, Plans Analyst in Physical Security
- Mark Jackson, 30 Years, Security Police Officer
- Milton Morton, 30 Years, Security Police Officer

NNSS Tour Impresses Energy Deputy Secretary

By Dante Pistone, NSTec

Energy Deputy Secretary Dr. Elizabeth Sherwood-Randall visited the Nevada National Security Site (NNSS) June 29, focusing on the high-tech science performed there.

Sherwood-Randall's primary briefing took place at the U1a complex, a large system of underground tunnels and drifts where high-tech scientific experiments are performed in support of the nation's nuclear weapons stockpile stewardship program. The program was initiated after full-scale nuclear testing ceased in 1992.

"I am very impressed by the high caliber of science conducted at the U1a complex and the NNSS," Sherwood-Randall said. "It's clear that the men and women working here are very committed to this vital mission. Their work gives those of us who are formulating policy in Washington, D.C. a great deal of confidence that our weapons stockpile remains safe, secure and reliable."

Located 960 feet below ground, U1a is used by the National Weapons Laboratories to conduct subcritical experiments to measure the properties of plutonium and other materials in weapon-like conditions, without actually reaching nuclear criticality. Scientists employ state-of-the-art diagnostics and X-ray radiography to collect important data during the millionths of a second when the materials are subjected to extreme high pressures and shocks that mimic conditions that would occur during a nuclear explosion.

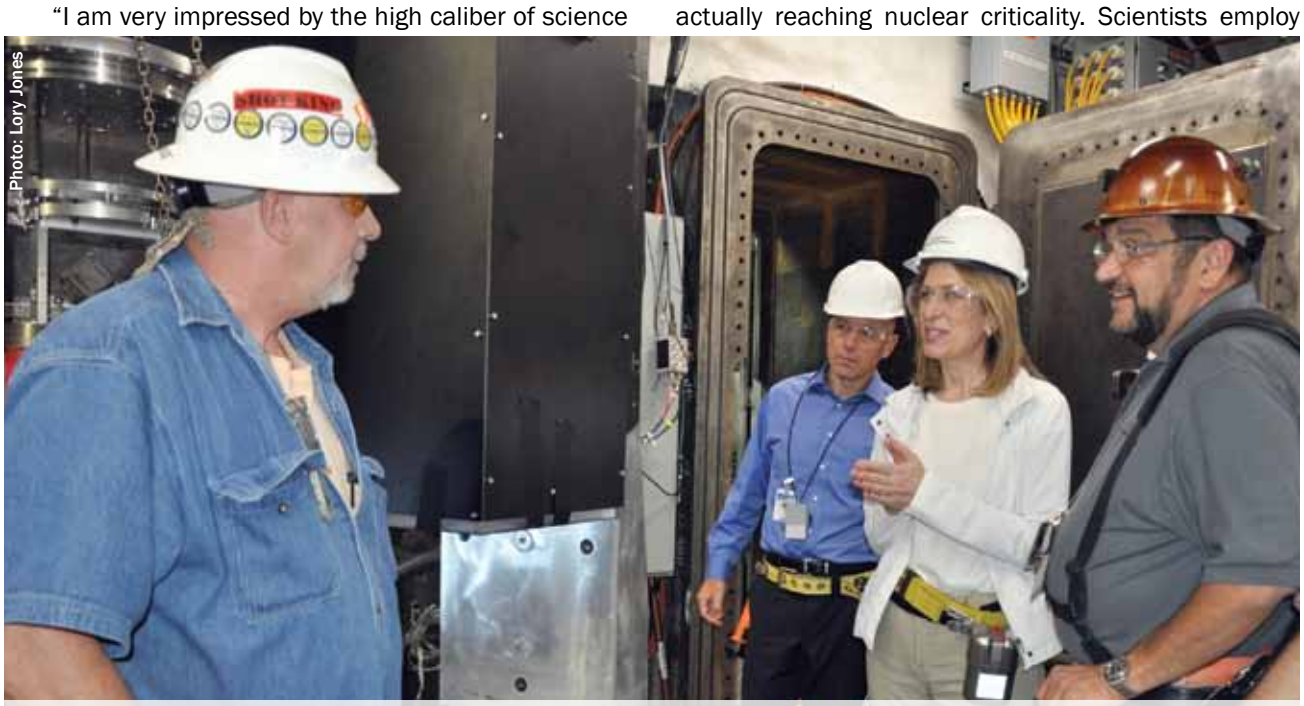


Photo: Lory Jones

In photo, left to right: NNSS' Monty Larsen, DOE Nuclear Issues Senior Advisor Mark Davis, Dr. Sherwood-Randall and NSTec's Raffi Papazian.

National Security Technologies (NSTec)'s Raffi Papazian, director of Defense Experimentation & Stockpile Stewardship (DE&SS), introduced Sherwood-Randall to the various programs and projects there, including Leda and the upcoming Lyra series of experiments.

"Dr. Sherwood-Randall was energized to meet our diverse employees and took time to discuss their professional careers," said Papazian. "She was particularly impressed to meet and discuss the technical challenges afforded by the experimental program with CY Tom, a DE&SS employee with 50 years of service to the NNSS." (See p. 2 for more on CY Tom.)

Also observing were Kathleen Alexander, DOE assistant deputy administrator for Research, Development, Test and Evaluation Office of Defense Programs NA-11 and DOE Nuclear Issues Senior Advisor Mark Davis. Accompanying them were senior management from the Nevada Field Office (NFO) and NSTec.

As the U.S. stockpile of nuclear weapons ages and continues to be reduced by treaties, it is more important than ever that the nation's leaders have confidence that the remaining weapons in the stockpile are ready if needed in defense of the nation.

CY Tom Jr.

Continued from page 1

In his present role since 2012, CY has worked on site-directed research and development, Forseti 1 and 2, two events at the Big Explosives Experimental Facility, a lab setup for the multiplexed photon Doppler velocimeter, and the latest subcritical experiment, Lyra. He is training new physicists in the setup and operations of Chirp Fiber Bragg Grating diagnostic and the electrical high explosive burn pattern diagnostic.

After 50 years, one has to ask, "Why not go out and do something fun, away from work?" But this work is fun, Tom said: "This is what I like to do." And he's very good at it.

Those who first meet Tom view him as a very low-key individual, not known for rash or outlandish activities. However, it was once reported that in the 1970s, Tom owned a motorcycle and that he would pop wheelies from time to time through intersections in Las Vegas.

Tom's most compelling memory of the last 50 years at the Site was at Area 17. "We were there during an underground nuclear test in Area 19 or 20. We saw the ground's shock rolling towards us from the test. It really shook us, and rocks fell from the hills," like an ocean wave using the ground as the medium, he said.

Tom has no plans to retire, although he would consider "early retirement" at 55 — years at work, that is.

Curious minds always ask: "What does CY stand for?" "It doesn't stand for anything. It's on my birth certificate," he said.

From all of us, thank you, CY Tom, for your time and dedication for 50 years at the Site. It is because of you that we have the reputation and the tradition of getting things done safely and doing them well.

SPE-4 Prime: High-level Collaboration for Arms Control

By David Pacheco, NSTec

Source Physics Experiment 4 Prime (SPE-4 Prime), north of Sedan Crater, was successfully conducted in May at the Nevada National Security Site (NNSS). The experiment, part of a long-term National Nuclear Security Administration (NNSA) research and development effort for improving arms control and nonproliferation treaty verification, is a collaborative effort between National Security Technologies (NSTec), Lawrence Livermore National Laboratory (LLNL), Los Alamos National Laboratory (LANL), Sandia National Laboratories (SNL), the University of Nevada Reno and the Defense Threat Reduction Agency (DTRA). The NNSS location in Area 15 was chosen because of the Site's granite geology and the presence of several historic nuclear tests conducted in the granite, which permits the comparison of chemical and nuclear explosions.

SPE-4 Prime is one of a series of experiments critical to the U.S. capability to detect low-yield nuclear explosions anywhere in the world. When nations decide to develop a clandestine nuclear weapons program, deterrents help them reconsider their actions. The fact that even small underground nuclear explosions generate seismic waves that can be detected and recorded at great distances is one deterrent. Unfortunately, industrial chemical explosions and earthquakes also generate seismic waves that can be difficult to distinguish from those produced by nuclear explosions. Data from SPE-4 Prime is essential for developing models to help determine whether emerging nuclear powers have attempted an underground nuclear test. The NNSS' geology is well understood as a result of its long history of mining and drilling in support of a variety of projects. This is why the NNSS is an ideal location to study the size and propagation of seismic waves and to validate or improve the numerical models that predict them.

Said Howard Patton, LANL chief scientist for the experiment, "The scientific objective of SPE-4 Prime was to suppress non-linear ground motions that normally occur on the Earth's surface over buried explosions. This is in order to study the importance of these motions for the generation of seismic waves." The shot was designed to test Patton's hypothesis that the damage above an explosion plays a significant role in shaping the shear and surface waves that are generated and recorded on seismic stations. An additional goal of the shot was to help determine the physics of how low-frequency sound is generated by deeply buried explosions.

SPE-4 Prime used a chemical explosive equivalent to 196 pounds of TNT at a depth of 286 feet below ground. Information gathered from this experiment included high-resolution accelerometer, infrasound, seismic, explosive performance, electromagnetic, ground-based lidar, and digital photogrammetry data. The SPE teams fielded 667 channels of seismic, infrasound, accelerometer and electromagnetic sensors. Post-shot analysis shows a 100-percent return rate on data from the sensor networks, with less than three percent of the channels being too noisy for analysis.

Photo: Nathan Roberts

The SPE-4 Prime explosive canister is lowered into the borehole.

The canister for SPE-4 Prime was designed by LLNL. A new grout formula to protect the canister downhole was developed by NSTec, explosive operations were conducted by LANL, and a new systems design was engineered by SNL to improve operational success. Multiple NSTec directorates provided a cohesive team in the design and detonation of SPE-4 Prime. NSTec directorate Global Security managed the project; Defense Experimentation & Stockpile Stewardship provided diagnostics and timing and firing support; and Operations and Infrastructure emplaced and grouted the canister, and stemmed the borehole. Additional support was provided by NSTec's directorates Nuclear Operations, Mission Assurance and Safety, and Environmental & Waste Management.

Three more experiments in granite are planned for the current campaign. After completion of these tests during 2016, SPE will move to Yucca Flat at the NNSS to repeat the series in alluvium. Conducting the tests in both the hard granite and soft alluvium provides data from the opposite ends of the spectrum in terms of rock properties. The tests in alluvium are currently scheduled to begin in 2017.

Said Chris Deeney, NSTec's vice president of Program Integration, "I am so proud of the SPE-4 Prime team, led by Jesse Bonner (NSTec) and Leon Berzins (LLNL), and their partners across the laboratories, plus DTRA for the successful execution of the experiment. The NNSA Source Physics Experimental series will have a pervasive impact for the treaty verification community. SPE-4 Prime delivered new data and importantly, established a new rigorous execution process that will ensure success every time."

Can You Dig It? DOE, Air Force Dig for Data

By *OneVoice* Staff Reports

In scorching desert heat, scientists donned personal protective equipment (PPE) to dig up soil samples at the Tonopah Test Range (TTR) in the name of scientific cooperation.

Part of a two-week joint field effort, personnel from the U.S. Department of Energy (DOE) contractor Navarro and the United States Air Force (USAF) collected both analytical samples and radiological data at the site of historic nuclear tests Clean Slate I and II. The samples and data will be analyzed to determine the path forward and closure methods for these sites.

This cooperative effort also provided the opportunity for the DOE and Air Force to learn about the other's characterization methods.

"It is anticipated that the results of these two different characterization methodologies will further validate the characterization and the ultimate closure of these sites," said Pat Matthews, Soils Project manager for Navarro Research and Engineering.

DOE is tasked with closing sites of legacy contamination resulting from historic nuclear testing on the Nevada National Security Site, TTR and Nevada Test and Training Range (NTTR). Since the TTR is on USAF land, DOE is striving to ensure that the site characterization (i.e., determining the nature and extent of contamination) and any closure agreement reached is also acceptable to the USAF.

This is one of many joint efforts between the DOE and USAF to address the environmental impact of historic nuclear testing on USAF land.

Another joint characterization effort is being planned for Fall 2015 and will include Clean Slate III and the Small Boy site, located on the NTTR.

Photo: Pat Matthews

DOE and USAF personnel collect soil samples and data for analysis.

65th Anniversary of the Nevada National Security Site

CELEBRATING 65 YEARS OF PROTECTING AMERICA'S NATIONAL SECURITY INTERESTS

By Jeff Donaldson, NSTec

In December 2015, the Nevada National Security Site (NNSS) will officially begin celebrating 65 years of atomic testing and homeland security history. From June through the rest of 2015 and into next year, *OneVoice* will feature the Site's bygone story, paying tribute to the men and women who served to protect national security there.

JULY '62 "SEDAN" TESTS NON-DEFENSE CAPABILITIES

The Plowshare Program at the NNSS opened the door to the Sedan test on July 6, 1962 – an underground detonation that left one of the most notable landmarks at the Site.

Designed to discover whether nuclear weapons could be used for non-defense-related projects such as building canals, Sedan displaced more than 7.5 million cubic yards of desert, leaving behind a crater measuring 1,200 feet in diameter.

Below is the report on the test from the United States Atomic Energy Commission:

(Issued at 11 a.m. on July 6, 1962, one hour after the detonation):

An underground nuclear detonation in the Atomic Energy Commission's Plowshare Program was fired about 650 feet underground at 10:00 a.m. PDT today at the Commission's Nevada Test Site. Purpose of the experiment, known as Project Sedan, was to create a crater in the earth to help develop the necessary technology for using nuclear explosives in earth moving projects.

The explosive device was designed for a yield in the 100-kiloton range. Careful measurements will be made of the crater shape and dimensions, pattern of earth throwout, and other characteristics of scientific and engineering interest.

In forming the crater, the detonation threw out a large amount of earth and rocks. The heavier components fell back to the ground promptly but, as had been expected, some of the smaller earth particles formed a dust cloud approximately 12,000 feet in height, which began drifting downwind in a northerly direction at a speed of approximately 12 miles per hour….

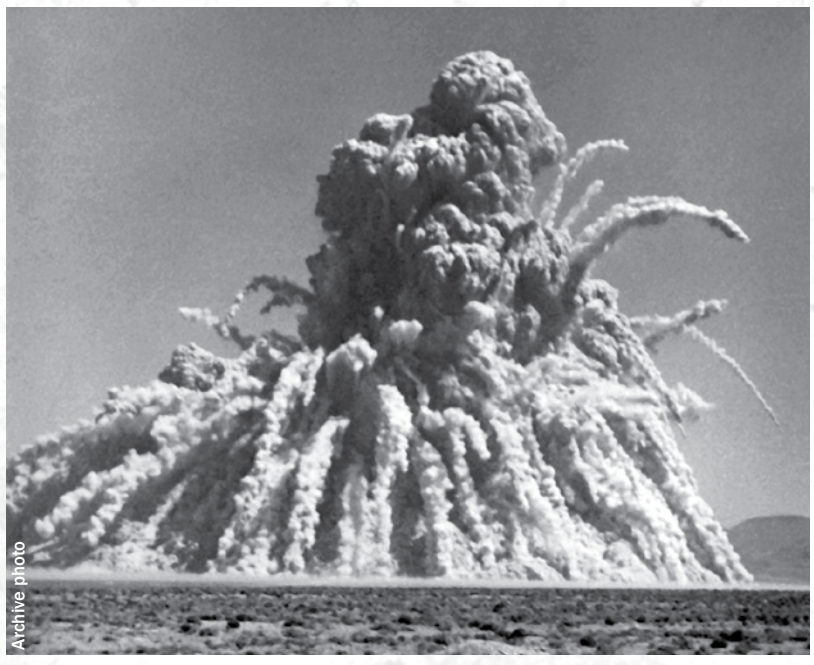
(Issued November 28, 1962):

On July 6, 1962, the United States Atomic Energy Commission detonated a thermonuclear device of approximately 100 kilotons (equivalent to 100,000 tons of TNT) in desert alluvial soil at its Nevada Test Site.

Project Sedan, the first nuclear excavation experiment in the Commission's Plowshare Program, was conducted to develop the technology for using nuclear explosives in earthmoving projects. Such projects include the excavation of canals and harbors, building dams, and removing overburden in mining operations.

The nuclear explosion was emplaced in a 36-inch diameter cased hole at a depth of 635 feet. It was a relatively "clean" device in which fission contributed less than 30 percent of the total yield. About 95 percent of the radioactivity produced by the explosion was trapped underground; most of the small amount of radioactivity which was not trapped underground was deposited close to the crater with the fallback of earth. The detonation formed a crater measuring about 1,200 feet in diameter and 320 feet deep with a volume of about 7.5 million cubic yards.

The experiment was conducted by the Atomic Energy Commission by the Lawrence Radiation Laboratory, Livermore, California.



Archive photo

Who are These NvE Veterans?

Continued from page 3

The picture on page 3 is U.S. Air Force Lt. Col. Stan McCloskey in 1995. Now he's the National Nuclear Security Administration Nevada Field Office's Federal Security Program Operations manager at the NNSS.

Photos: Video Services

U.S. Air Force Senior Airman Kirk Buckley was posing in uniform in 1989. Today he's a senior technologist at NSTec.

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Nevada National Security Site

Diverse Upgrades Improve IT Communications

Bye-bye, BlackBerry – Hello, Smartphones

By Lory Jones, *OneVoice* Editor

Several high-technology innovations are in the works throughout the Nevada Enterprise (NvE), with some currently in operation. National Security Technologies (NSTec)'s Information Technology division is upgrading the NvE's communications' systems – whether on the road at the Nevada National Security Site (NNSS) or in our own offices.

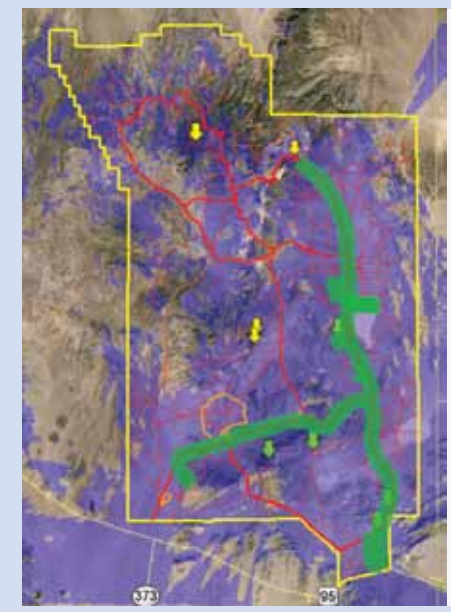
The changes affect cellular phones, tablets and computer systems, mobile radio system, desktop/video conferencing and "hoteling" for work-at-home employees. AT&T now provides the new cellular system coverage; however, there is still limited coverage from Verizon.

"This is a huge game changer," said Robert Hillier, NSTec's chief information officer. "The upgrades are designed to ensure that a reliable and secure foundation supports end user services. We have five AT&T cell towers, two AT&T mobility zones and one Verizon cell tower. Over the next 18 months, we will upgrade all of our existing cell sites to 4G LTE and build out additional sites. Cell coverage will improve from about 40 percent coverage of the Site to close to 90 percent."

The updates include trading BlackBerrys for new 4G LTE smartphone, either Apple's iPhones or Microsoft smartphones. "Security considerations are steering us away from Android devices," said Hillier.

This project will be a win-win for NSTec providing new phones, improved coverage, reduced recurring cellular costs by 15 percent and improved connectivity for the Site, Hillier added.

So far, the cellular coverage has supported the NvE's primary business areas, including the facilities in North Las Vegas, at Nellis and Andrews Air Force Bases, Special Technologies Laboratory and Livermore Operations in California, and Areas 23, 5, 6 and 27 at the NNSS. New radio sites for cellular will be located at the NNSS' Gate 510, Shoshone Peak, Echo Peak and Dino Hill providing coverage for Camp 12, Areas 19 and 20, 40 mile Canyon, X Tunnel and Jackass Flats.



This graph displays the cellular distribution and coverage at the NNSS. The green line shows where the network is distributed, mostly extending along Mercury Highway (including Rainier Mesa Rd.), Cane Spring Rd. and Lathrop Wells Rd. The blue areas are designated for 4G LTE coverage for personal and company cellphones. The green arrows indicate existing cellular sites that will be upgraded to 4G LTE; the yellow arrows indicate new cellular sites which will also be 4G LTE.

"With 1,360 miles at the Site, it's impossible to provide wired coverage everywhere. From a productivity and safety perspective, this is a huge improvement." said Hillier.

IT's Other Upgrades

Radio

The NvE will get a modern, trunked land mobile radio system that provides highly reliable radio services for enhanced site safety and security. Users can purchase the new technology radios with encryption and GPS (as needed for mission operations). The 15-year-old Motorola radio system in use will be replaced by a Harris P25-based system (international standard for land mobile radio systems). The new radio system is critical for security, emergency response and personnel safety. The project is already underway and should be complete by end of calendar year 2016.

Video conferencing

This project will replace the NvE's aging video conferencing system, as well as all current conferencing rooms with state–of-the–art, Internet-protocol-based, high-resolution video. It will also include desktop-to-desktop conferencing.

Hoteling

NSTec's 21st century workforce will allow the flexibility for certain workers to work from home. Supporting this will be Connect Server, which allows the remote employee to connect to the NSTec network from any device, and "hoteling," which will provide the remote worker a temporary work location to work at NSTec locations when required. The hoteling pilot program began in March at the North Las Vegas Facility and was completed in June. It will be offered soon across the company where appropriate.

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